American Druggist

Vol. XVII. No. 4. NEW YORK, APRIL, 1888. Whole No. 166.

The Norwegian Cod-Liver Oil Industry.

FROM a lengthy report of U. S. Consul-General R. B. Anderson, of Copenhagen, published in the *Reports from the Consuls of the U. S.*, we take the following:

1. *Preparing the Fish.*

On the way home from the fishing grounds each night when the sails can be used and the men are free, the day's catch is immediately prepared. The head is removed and saved. Then an incision is made near the tail of the fish in order to let the blood out. The liver and spawn are saved in holders brought especially for the purpose, and the entrails are cast into the sea. The fish designed for drying without salt are now tied together by the tails, two by two, without washing, and hung over racks on shore, where they remain drying in the sun until June 12th, it being forbidden by law to take them down sooner, as many men live at great distances from the drying grounds and in the absence of the law mentioned the temptation to appropriate other men's property was found to be too strong for the first comers to resist. The fish to be salted are usually sold to small smacks, which are sent by the merchants of the cities lying further south to cruise and buy them up. In these vessels the cod are salted in layers in the hold. After being opened to the backbone along the whole length of belly, the bone is removed to the third joint, opposite the navel. The fish receives no washing under this process, even though it is a well-known fact that a little care in this direction would give the finished cod a much better appearance. After completing a load the smacks depart for the small islands lying outside the cities of Throndhjem, Aalesbund, Christiansund, and Molde, where the fish are alternately piled in stacks to press the moisture out of them, and then spread on cobblestone pavements or the natural rocks to dry in the sun until ready for export.

2. *Fish Oil.*

Oil occupies by no means an insignificant position among the products of Lofoden, though in amount it varies through the several years far more than the other cod products. From 1876 to 1880 the production averages 45,000 hectoliters* per year, while in 1883 not more than 8,000 hectoliters were secured, and in 1886, 35,000. The value of the product also varies, according to quality and the amount produced, from 25 kroner ($6.66) to 350 kroner ($93.33) per barrel. The preparation of this oil is carried on partly at factories and partly as a sort of domestic industry. The liver saved, as before stated, is sometimes sold to the local factories and sometimes collected in barrels which, at the end of the season, the fisherman takes to his home in order to prepare their contents. In this way the livers often stand many weeks, and upon their arrival a certain quantity of their oil has already been freed by the rotting of some of the liver cells. This is poured off, and then, by repeated boilings over open fires, the rest of the oil is boiled out. In this way four sorts of oil are obtained—raw medicinal, clear (yellow), partly clear (light brown), and refuse or train (brown).

The livers sold to the factories are treated in other ways, and from them is obtained the well-known product which is sold as steam refined cod-liver oil. As much of this is exported to America, where it is admitted to be superior to the Newfoundland oil, I took pains to ascertain the process by which it is prepared and for this purpose I visited the celebrated factory at Stamsund, established by the late Peter Möller. Here I was well received by the present owner, the son of Peter Möller, who gave me every facility for seeing his works and assisted me in getting a clear description of his method of preparation, laying special stress upon the fact that there was no secret connected with the process. His own success, he claimed, was due chiefly to a careful selection of the livers and a scrupulous cleanliness at every stage and point of treatment. The very first requirement for the production of a good article of oil is that the liver should of the best sort and perfectly fresh. The fish from which it is taken should have been caught the same day as the boiling is done.

When care is observed, and if the thermometer be under the freezing point, the liver may also be used the day following the catch.

After being most carefully sorted, the sick livers being known by their greenish tinge, and lean, scanty ones by a red, or often really black color (both of these to be unhesitatingly thrown out), the livers, with the gall-bladders removed, are well washed and tried out by one of three processes. The first of these is used in many of the refineries, as the capital required for a plant is not great and the oil obtained may be excellent, if sufficient care be observed in its preparation. In this process the principle is simply even heating of the raw material in water-baths.

The second method, used in the factory I visited, and which I myself witnessed, consists in gradually heating the livers in iron kettles about and under which steam is circulated freely, the temperature being automatically regulated by ventilators.

The third method is the most rapid, simple, and cheap of all, and is mostly used on board vessels which are sent to Lofoden for the sole purpose of trying out oil. It consists of passing steam under some pressure directly into the mass of livers, which heated, rapidly give up their oil. After being obtained by any of these processes and poured off, the oil is cooled more or less, and during a longer or shorter time, during which treatment the stearin separates itself in a ratio proportionate to the degree of cold and the time cooled.

The better sort are kept for a long time at a temperature not above zero C., and are then pressed in cold rooms, filtered, and bottled. If all the oils prepared by either of the first two of these methods are not equally good and clear, the reason lies in the fact that the process has not been conscientiously followed and not in any secret of preparation. The fault generally lies in the choice of the livers. Strong competition often makes it unprofitable to discard large masses of raw material, simply because it is somewhat old or tainted, especially when it is known that the resulting oil cannot be recognized until after the lapse of some time.

By the third process of trying out the oil—that is, by rapid and high heating of the livers through direct contact with the superheated steam—more oil is obtained, but of a far inferior quality, as it quickly acquires a disagreeable taste, and can be detected by its appearance a short time after preparation. Long experience and extensive experiments at the better factories have demonstrated that the oil should never be heated above 70° C. Oil which has been subjected to a higher temperature oxidizes on contact with the air the more rapidly the higher the temperature it has reached. How far the separation of the stearin is of any gain or loss from a therapeutic standpoint is still an open question, but the demand of the public that the oil shall remain clear, even in cold weather, makes the present process necessary. In respect to the amount of stearin contained, there is a great difference between the Lofoden and Newfoundland oils. While the former yields from 10 to 15 per cent of its bulk in stearin at a temperature zero C., the latter, under the same conditions, never gives more than 5 or 6 per cent.

The last filtering of the oil cannot be done too carefully, as there are always minute particles of liver cells held so finely in suspension that only the most painstaking filtering can remove them. At first they are invisible, but they collect, and later show themselves as a sediment at the bottom of the bottle or vessel in which the oil is preserved.

As to the difference in quality between the American and Norwegian cod-liver oil, I think I am safe in saying, as may in fact be seen from the statements already made, that it arises chiefly from the different circumstances under which the fishing is carried on.

At Lofoden the boats used are small and open, and the circumstances require that they shall be ashore every night, and thus the factories can obtain the livers of each day's catch when not more than a few hours old. On the other hand, the fishing on our coast is carried on in decked vessels, fitted for long cruises, touching shore only at long intervals, so that by the time the livers can get to the factories they are old or partly putrefied. To remedy this, and thus bring the large American trade in cod-liver oil mainly or wholly into American hands, I would suggest that our oil refiners send out clean, nicely-fitted steam refining vessels, which should cruise the fishing-grounds, buy the livers fresh from the fishing smacks, and try out the oil on the spot and in the manner above described. This plan is thought perfectly practicable by several persons largely interested in the Lofoden industry with whom I have talked. I consulted Dr. F. P. Möller, whose father, Peter Möller, was the first to produce steam-refined cod-liver oil about thirty years ago, about this proposition, and he admitted that if adopted it would be of no small advantage to our American fishermen.

To Dr. F. P. Möller I am largely indebted for the detailed description of the methods and processes of producing medicinal cod-liver oil. As the American coasts produce such an abundance of cod, it would seem to me that by the plan suggested we might ourselves produce

* One hectoliter = 26.4 gallons.

all the cod-liver oil for our own consumption and even compete in the European and other foreign markets.

The Manufacture of Lithium Salts for Medicinal or Technical Purposes.

THE element lithium is one of those which are widely distributed and occur in many localities, but only in a few places in such quantity that its extraction becomes profitable. Its most abundant source is the mineral *lepidolite*, consisting of silicate of aluminium and fluorides of alkalies, among them also lithium, which amounts to about 3 per cent of the total constituents. The most abundant deposit of this mineral which is easily accessible, is a layer, occurring between granite and gneiss in the mountain of Hradisko near Rozena, in Moravia (Austria). Lithium occurs also in some other minerals, up to about 7%, but these are of too rare occurrence to serve as sources of manufacture. Many mineral waters contain lithium, but mostly in very small quantity. Some of them, however, contain a sufficient amount of it to warrant their employment as forms of administration of lithium for medicinal purposes. There are several valuable springs of this kind in the U. S., for instance, one at Ballston, another near Buffalo, and one in Virginia. The Mur-spring at Baden-Baden contains 0.2952 Gm. (about 4.9 grains) of chloride of lithium in the liter, and a hot spring in Cornwall (England) is said to contain 0.372 Gm. (about 6 grains) per liter, the total quantity of water produced in *one* day containing about 300 kilos of the chloride of lithium. Lithium has also been discovered in the ash of many plants, in the blood and milk, and in other substances.

The general method of preparing lithium salts from the crude minerals consists in decomposing the latter by acids or, if this is impracticable, to fuse the mineral with lime and extracting the mass with water. The resulting solution is then freed from all bases except alkalies. And the usual method formerly practised for separating the lithium from the other alkalies was based upon the slight solubility of carbonate of lithium in water, compared with that of the carbonates of the other alkalies. If a concentrated solution of an easily soluble lithium salt (for instance, the chloride) is mixed with a solution of carbonate of sodium, or potassium, or ammonium, carbonate of lithium is precipitated. There is, however, some lithium left in solution, and, besides, the precipitated carbonate of lithium contains a considerable proportion of the carbonate of the alkali used for precipitation. Sometimes the precipitate appears to have been put on the market without further purification, and hence the complaints which have recently been made by some French writers (see elsewhere in this journal) that the commercial salicylate of lithium, received from Germany, is contaminated with salicylate of sodium. The precipitate above spoken of can only be deprived of the accompanying alkalies by repeatedly dissolving it in hydrochloric acid, precipitating with carbonate of ammonium and pressing. When chloride of lithium occurs in the solution alone with chloride of sodium, the two may be separated by alcohol or a mixture of alcohol and ether, which dissolve the former, but not the latter salt.

As *lepidolite* is the most common mineral of lithium, though occurring only in a few localities, it is usually employed as the source of the commercial lithium salts.

According to Cooper, this mineral contains only 0.7% of lithia and 0.99% fluoride of lithium; according to other authorities, the lithium amounts to about 3 per cent.

There are probably some localities in the U. S. where this mineral occurs, but so far we have not heard of any place which affords it in sufficient quantity, and readily accessible.

Among the processes employed on the large scale for extracting the lithium from the mineral, the following method, used by E. Schering of Berlin, is the best. It is based upon that of Joss, which is briefly as follows: The elutriated mineral is digested for some time with concentrated sulphuric acid in stone-ware vessels. The excess of sulphuric acid is afterwards driven off by heat, the mass extracted with water, the solution precipitated by ammonia (which separates alumina, silica, iron, etc.), the filtrate from this evaporated to dryness, and the residue ignited. The latter consists of alkali sulphates which are separated by alkali carbonates.

In Schering's factory, this method is modified in the following manner:

The mineral, lepidolite, is finely powdered and sifted, transferred to a basin of stone-ware situated so as to be surrounded by warm air, then mixed to a thin magma with concentrated sulphuric acid, and digested until the mass becomes lumpy. It is then calcined on a hearth, and, while still warm, completely lixiviated with water. Before the resulting solution is evaporated, it is mixed with enough sulphate of potassium to combine with the aluminium present to alum. During the evaporation, the latter separates as a fine precipitate, which is removed, and any alum that may finally remain in solution is decomposed by milk of lime. After filtering and washing, the united liquids are mixed with chloride of barium, whereby all the bases present are converted into chlorides, while sulphate of barium falls down. The whole mixture is then evaporated to dryness, and the residue extracted with absolute alcohol, which dissolves out the chloride of lithium and chloride of calcium. After removal of the alcohol (which is, of course, recovered), the calcium salt is decomposed by oxalate of ammonium, and if any contaminating metals should still be present, these are gotten rid of by sulphide of ammonium. The filtrate is again evaporated to dryness, once more extracted with absolute alcohol, and, upon the removal of the latter, almost absolutely pure chloride of lithium is left behind.

To convert this into the carbonate, which is the starting point for all other salts of lithium, it is dissolved in a small quantity of water, and precipitated by carbonate of ammonium and water of ammonia. The resulting carbonate of lithium is finally washed with alcohol of 60%, whereby the remaining traces of chlorides may be removed.

Anthrarobin, a new Dermatic Remedy in Place of Chrysarobin.

PROFESSORS LIEBERMANN and SEIDLER showed, in 1878, that the active principle of goa-powder was not chrysophanic acid, as had been announced by Attfield, but a body in which the quinone group of chrysophanic acid was in a partial state of reduction, and which, therefore, was able to absorb a considerable quantity of oxygen under certain conditions. This body was called *chrysarobin* by the discoverers, and it is under this name that it has been introduced into several pharmacopœias.

Liebermann's theory that the therapeutic activity of the commercial so-called chrysophanic acid resided exclusively in the readily oxidizable chrysarobin received confirmation by the fact that pyrogallol (pyrogallic acid) was subsequently found by Dr. Jarisch to be an equally effective agent, though he selected it for other reasons. Prof. Liebermann, however, reports that Dr. Jarisch agrees with him now as to the true interpretation of the therapeutic activity of pyrogallol.

Prof. Liebermann has recently had occasion to devote renewed attention to this subject, being engaged in studies of the reduction of chrysophanic acid to chrysarobin, and of the leuco-bodies (colorless derivatives) obtained from the coloring matters of anthraquinone. The leuco-derivatives of alizarin, flavopurpurin, anthrapurpurin, anthragallol, etc., etc., all possess the property, when in alkaline solution, of absorbing oxygen with the greatest energy, whereby they are converted into the corresponding coloring matters. If Prof. Liebermann's theory regarding the action of chrysarobin was correct, then all these bodies should turn out to possess similar therapeutic effects.

In testing this question, useful results could be expected only from such compounds which could be prepared on a large scale. Among these, the most promising were alizarin, flavopurpurin, and anthrapurpurin.

Prof. Liebermann first describes his attempt to prepare the leuco-derivatives of these bodies by heating them with glacial acetic acid and granulated zinc, but does not recommend this method, as it is not economical. However, the first specimens employed in making the therapeutic tests were prepared in this manner.

The best agents for accomplishing the reduction are zinc dust and ammonia, which had already before been employed by Liebermann himself and others as efficient reducing agents. It is only necessary to boil the respective coloring matters, during fifteen minutes, with zinc dust and dilute water of ammonia (details will be found in *Berichte d. D. Chem. Ges.*, xiv., 1,260, and xv., 1,040), and to filter the ammoniacal solution into hydrochloric acid, whereby the leuco-substances are precipitated. They are then washed and dried, and in this state are sufficiently pure for medical use.

The first body thus prepared by Liebermann was derived from flavopurpurin. For this and several succeeding trials, only the chemically pure substances were used. As soon as it was ascertained that all of these derivatives possessed about the same therapeutic energy, it was no longer necessary to employ chemically pure bodies, but the cruder, technical substances were subsequently employed.

The leuco-derivative of alizarin had already, some time ago, been prepared by Rœmer (not for therapeutic purposes, however), and had been named *desoxyalizarin*. In accordance with this term, the corresponding derivatives of the other coloring matters should be called *desoxyflavopurpurin*, *desoxyanthrapurpurin*, etc., but Liebermann, recognizing the unsuitableness of these terms in medicine and pharmacy, proposes to apply the generic name "*anthrarobin*" to the leuco-derivatives of the crude technical alizarin. This name is to recall not only the fact that the new substance is derived from the anthraquinone group, but also its chemical and therapeutic relationship to chrysarobin. If it is necessary to make a special distinction between the anthrarobins derived

from the several members of his group, then the following designations may be used, as proposed by Liebermann:

1. *Anthrarobin* (without further specification) is to denote the product obtained from commercial alizarin ("blue tint").

2. *Anthrarobin* "P," or "F" is to denote that prepared from the commercial purpurins.

And it is under these names that the new substance will be put on the market by the manufacturers, Messrs. Jaffé and Darmstædter, of Charlottenburg.

Anthrarobin, as it will appear in commerce, is a yellowish-white powder which is scarcely affected by the air if kept dry. It is insoluble in water and aqueous acids, but most easily soluble, even in the cold, in dilute solutions of the alkalies, ammonia, and alkaline earths, yielding brownish-yellow solutions. The latter, however, are not permanent, but absorb oxygen from the air with the greatest avidity. Most energetic in this respect are the solutions made with fixed alkalies. The color of these solutions is at first green, then becomes blue, and finally changes to alizarin-violet. This change of color, which can be used as a reaction of identity, is best observed when dilute solutions are shaken in a test-tube, the tints being most prominently noticeable along the inner walls of the test-tube (held against white paper), where the air has exerted the greatest effect. The absorption of the oxygen of the air may be easily demonstrated by shaking about ½ Gm. of the substance mixed with a solution of an alkali in a test-tube firmly closed with the thumb. It will be found that the tube will remain attached to the thumb by suction, owing to the rarefaction of the air in the tube.

Anthrarobin is soluble only with difficulty in benzol or chloroform, but in glacial acetic acid or in alcohol it is much more soluble than chrysarobin. Of alcohol (90-95%), 5 parts are sufficient to hold it in solution in the cold. The technical product yields a brownish-yellow solution with alcohol. If this menstruum is to be used, it is best to use it at a boiling temperature, which effects solution at once. But long boiling must be carefully avoided, as the body is liable to be decomposed. Cold alcoholic solutions are slightly oxidized when exposed to the air, but in a well-corked bottle they may nevertheless be kept, with but little change, for weeks. The alcoholic solution may be diluted with glycerin without precipitation. In fact, glycerin dissolves the substance likewise.

The technical product contains about ½ per cent of ash, among which is a trace of oxide of zinc, but this is of no importance.

Dr. Behrend, of Berlin, has made experiments with the new body in his dermatological clinic. He reports having successfully treated with it 9 cases of herpes tonsurans, 1 of pityriasis versicolor, 1 of eczema marginatum, and 3 of psoriasis. He also states that anthrarobin is applicable to precisely the same skin affections as chrysarobin. Its effect is somewhat less energetic than that of the latter, but is still more intense than that of pyrogallic acid.

Anthrarobin, however, possesses this advantage over chrysarobin, that it does not inflame the skin. Hence it may be used also upon the head and on the face. It imparts to the skin a light brown tint. Stains which are caused by it upon linen and white fabrics may be easily washed off with soda and soap, which cannot be done in the case of chrysarobin.

Prof. Liebermann thinks that the introduction of this new body possibly marks only the beginning of a whole series of other active remedies, the effects of which depend upon their avidity for oxygen.—After *Berichte d. D. Ch. Ges.*, 1888, 447.

Dhaura—a Useful Gum from India.

In a communication on Indian dyes and methods of dyeing followed in India, read recently before the Liverpool Section of the Society of Chemical Industry (*Journ. S. C. I.*, Dec. 31st, p. 79), Mr. Elworthy calls attention to the gum known in India as "dhaura" derived from *Anogeissus latifolia*, which he thinks would be found a useful gum in English dye works, as yielding a thick viscid liquid much superior to dextrin or "British gum," and at the same time cheaper than gum-arabic. When mixed with a small proportion of hydrochloric acid, Mr. Elworthy says, the liquid gum keeps good for several months, and although its adhesive qualities are lessened by this addition, it still answer very well for labels. This gum, it may be mentioned, is referred to with approbation by Dr. Watt, in his "Economic Products of India." Professor Dymock also speaks of it (*Mat. Med. W. Ind.*, p. 324) as a valuable gum, occurring in vermicular pieces, very slightly colored, translucent, tasting like gum arabic, and readily soluble in cold water, with which it forms a strong, almost colorless mucilage, having a faint peculiar odor. The tree is common in the Concan and Khandeich and the gum is collected by the Bheels.—*Pharm. Journ.*

It is estimated that one-half of all the drugs imported into the United States is consumed in the manufacture of patent medicines.

A New Antiseptic.

Messrs. Ellenberger and v. Hofmeister have recently published a paper in the *Archiv für exper. Pathol. u. Pharmacol.* upon some new derivatives of naphthol, namely, certain acids derived both from alpha and beta-naphthol which they found to be more powerful antiseptics than either salicylic or carbolic acids.

One of these compounds is alpha-oxynaphthoic acid, (or alpha-naphthol-carbonic acid). This is prepared in a similar manner to salicylic acid, naphthol being substituted for phenol. In fact, it is prepared by bringing together, under strong pressure, and at an elevated temperature, alpha-naphthol sodium and carbonic acid gas. Its constitution is expressed by the formula:

$$C_{10}H_6.OH.COOH.$$

The *Chem. and Drugg.* thus abstracts a portion of the paper: The compound is nearly insoluble in water; 100 C.c. in the cold only take up 0.0535 gramme. The acid sublimes unchanged between 90° C. and 100° C., and melts at 186° C. with evolution of carbon dioxide. It is soluble in the alkalies and alkaline carbonates, forming salts which are colorless and of neutral reaction, and more soluble in both hot and cold water than the acid itself. Thus 100 C.c. at 18° C. dissolve 6.37 grammes of the salts. The acid is precipitated from its salts by hydrochloric, sulphuric, nitric, aracetic acids, but not by carbonic acid gas. Solutions of the salts ultimately decompose when kept even at normal temperatures. The sodium salt, on the addition of fuming red nitric acid, changes to a beautiful violet or blue color, slowly passing into red by which reaction the acid may be always identified and distinguished from beta-oxynaphthoic acid, with which it is isomeric, but which, with fuming nitric acid, affords only a greenish-yellow coloration.

Alpha-oxynaphthoic acid and its combinations with alkalies have been studied by the authors with regard to their antiseptic properties, and also in regard to their effects upon the body in health and disease, and upon the various organs of the animal structure. Fresh meat juice began to putrefy in from about twelve hours when kept at from 37° C. to 40° C. The addition of 1: 20,000 of α-oxynaphthoic acid was found to retard the decomposition to forty-eight hours, and with a proportion of 1: 2,500 no bacteria could be detected in unboiled liquids after seven days. When the liquid had been boiled, an admixture of 1: 1,200 was found to be amply sufficient for the prevention of putrefactive change. In the proportion of 1: 600 decomposition was stopped in liquids undergoing rapid change. The sodium salt, however, had to be added in the proportion of 1: 300 to prevent decomposition, and when this was actively progressing the salt named was powerless to check it. The effect of the β-acid was very similar.

It is surmised that these compounds will also turn out to be antipyretics, like salicylic acid, and if they are to be used as such, probably they will be used in form of sodium salts.

Experiments thus far conducted to ascertain the destructive effect of these agents upon bacteria are reported to have given very favorable results.

If these substances are to be used in medicine, it will be necessary to rechristen them.

Alpha-Naphthol.

A few weeks since (*Pharm. Journ.*, Dec. 3d, p. 437), a reclamation was put forward in respect to the superiority of beta-naphthol as an insoluble antiseptic and its relatively non-toxic properties.

Alpha-naphthol has now in its turn become the subject of a panegyric by M. Maximowitch (*Compt. Rend.*, CVI., 366). This compound, like beta-naphthol, from which constitutionally it differs only in the position of the hydroxyl group—is insoluble in cold water; but in water at a temperature of 70° C. it dissolves to the extent of 4 parts in 10,000, the solution being of a violet color. It is readily soluble in alcohol and ether, and in a liter of dilute spirit containing 400 c.c. of absolute alcohol it will dissolve to the extent of 10 grammes. M. Maximowitch has studied the antiseptic value of alpha-naphthol by noting its effects upon fourteen different kinds of microbes cultivated in different media. He found that when added to cultivations in liquids of the bouillon class, in the proportion of 0.1 part per 1,000, it completely arrested the development, amongst others, of the microbes of glanders, chicken cholera and pneumonia, the bacillus of typhoid fever, and the organisms of suppuration, *Staphylococcus albus* and *S. aureus*. For cultivations in gelatin, the same proportions were effective, but for agar-agar the dose had to be stronger in some cases. Urine, after being shaken with alpha-naphthol in alcoholic solution or in powder, did not ferment. When introduced into the organism of rabbits, alpha-naphthol was found to be three times less toxic than beta-naphthol and 700 times less toxic than mercuric iodide, the toxic dose for a man weighing 65 kilos, being calculated as 585 grammes.—*Pharm. Journ.*

Salicylates.

THE salicylates of various bases are now coming more into use in Germany, according to a correspondent of the *Chem. and Drugg.* Bismuth, though not so much prescribed as in England, is in some favor as salicylate, and is found beneficial in chronic dyspepsia and diseases of the digestive tract generally. Magnesium salicylate is also in use, being given in doses of from 1 to 1½ drachms daily. As an antiseptic dressing, and particularly in combination with sodium chloride, salicylate of mercury is much recommended, being applied as a 4-per-cent solution with the adjunct named.

Terpin Hydrate.

TERPIN HYDRATE hus but slight taste, has no odor, and is solid. It appears as small needles when crystallized from a mixture of turpentine and water, or it may be obtained in large, rhombic crystals by allowing alcohol (3 parts), turpentine (4 parts), and nitric acid (1 part), to stand in shallow dishes for 3 to 4 days. It is slightly soluble in water or turpentine, but never readily by alcohol, ether, or hot water. It is best given in pills or in wafer. An emulsion may be used, but is not an agreeable form. It may, however, be dissolved in glycerin, and after solution an equal amount of some syrup may be added. From 16 to 24 grains to the ounce of the latter can be given in teaspoonfuls every 3 to 4 hours. It has been given in doses as large as 10 and 15 grains, but there is risk of disturbing the kidneys. It has the advantage over other terebinthinates of being tasteless, while its usefulness seems to be quite as great.—PROSSER JAMES in *The Lancet.*

Morphine Hydrate.

AT a recent meeting of the Pharmaceutical Society of Great Britain, Mr. D. B. Dott read a paper on morphine hydrate, of which the following abstract is given by the *Chemist and Druggist:*

It is generally stated that morphine hydrate crystallizes with one molecule of water of crystallization, which it does not lose below 100° C. Who is responsible for this statement the author has been unable to ascertain—it is probably due to some early chemist—but, however that may be, the statement is universally accepted and has been corroborated by Matthiessen and Wright, who, with other authorities consulted, say that the molecule of water is only driven off above 100° C. The author was surprised to find, on submitting the matter to test, that these statements are wrong, and he has conclusively proved that at 90° C. morphine hydrate loses its combined water. In the course of the observations, there were indications that the hydrate is hygroscopic, and subsequent experiments warrant this conclusion; also that the formula of the hydrate should be $C_{17}H_{19}NO_3.1\frac{1}{2}(H_2O)$; or, more correctly, $8C_{17},H_{19}NO_3,9H_2O$.

Caramel.

CARAMEL or sugar-coloring is prepared in the following manner:

10 parts of crushed sugar are heated in a copper kettle with 3 parts of water. At first the sugar will dissolve, but after a while it will again solidify to a firm mass which must be broken up. When the pieces have again become liquefied, the mass becomes dark-colored and begins to foam, necessitating a continued stirring. The heating is now continued, over a gentle fire, until the mass has become black and pitch-like. Then the kettle is removed from the fire and 10 parts of boiling water poured in, which must be done cautiously and gradually, or the contents might run over. Finally, the kettle is replaced, the contents allowed to boil up a few times, and then again removed and allowed te become cold. During the boiling, the tendency of the contents to rise too high may be overcome by adding, from time to time, a little cold water.

The caramel thus produced is soluble in liquids containing up to about 50 per cent of alcohol. In strong alcoholic liquids, however, it is only partially soluble.

Carbolate of Camphor.

DR. M. B. COCHRANE communicates a note to the *Therapeutic Gazette* on a new compound, to which he gives the name of carbolate of camphor, and which appears to possess the antiseptic properties of carbolic acid, and the carminative properties of camphor, without the cauterizing properties of the former. It is prepared by dissolving camphor in a 95-per-cent solution of carbolic acid to saturation. The carbolic acid will dissolve about three times its weight of camphor, and the product is a thin, clear, oleaginous mixture, having a strong odor of camphor and a very faint odor of carbolic acid. To the taste it has a strong and, at first, slightly pungent flavor of camphor, but no flavor of the acid. It dissolves readily in vegetable oils and in vaseline, mixes with sulphuric ether, dissolves salicylic acid, cocaine, iodoform, and, in the proportion of forty grains to one ounce, disguises the odor of the latter. Taken internally, in ten-drop doses, administered in capsules, it produces a sensation of warmth in the stomach which is not unpleasant, and which continues for an hour or two. When applied to the skin it produces a slightly warm sensation for a few moments, and when applied to an abraded surface it smarts for a moment and then all pain ceases. When mixed with an equal quantity of cotton-seed oil, and applied to a fresh wound on gauze or cotton, and kept well covered, no suppuration follows, nor does vesication or pain.—*Chem. and Drugg.*

Strophanthus Seeds.

No less than six varieties of strophanthus seeds met with in French commerce are described by M. Blonel (*L'Union Pharm.*, p. 52). 1st. *Strophantus hispidus* seeds, from Guinea and Senegambia, which are brown, velvety, acuminate below, bearing a long awn, of which the velvety part is almost as long as the naked part of the awn. 2d. Seeds of the *Strophanthus* of the Niger, which are also brown and pubescent, but with a rounded or truncate base, are much larger and have a more developed awn. 3d. *Strophanthus Kombé* seeds from the centre and east of Africa, which are hairy and glistening, of a greenish or bluish-green tint, truncated or rounded below, the lateral sides bulged or often incurved in front, and having a long awn with very spreading hairs. Under this variety M. Blondel thinks two or three forms may exist, distinguishable by the greater prominence of the raphe and the anatomical structure of the integuments and albumen. 4th. The woolly *Strophanthus* seeds of Zambesi are remarkable for their thick coat of white and shining hairs, sometimes five millimeters long, hiding their real shape and size, which is relatively small. 5th. The *Strophanthus* seeds of Sourabaya. 6th. The smooth *Strophanthus* seeds of the Gaboon, which are thin, yellow, and without pubescence. The two last kinds are not at present in commerce. M. Blondel has also met with strophanthus seeds in commerce which had been exhausted with alcohol. These are recognizable by the almost entire absence of bitterness and by the hairs being somewhat agglutinated by extracted resin.—*Pharm. Journ.*

The Oil of Mountain Pine.

THE Mugho, or Mountain Pine, is the *Pinus Pumilio* of Lambert, and from which exudes the once-prized Hungarian balsam. By distillation of the young branches with water a volatile oil is obtained, long known as "*Oleum Templinum*," or "*Krummholzöl.*" This is the most potent agent in the so-called "pine-cure" practised at Reichenthall and other German spas. At these resorts the vapor of the water, as it escapes into the inhalation rooms, is medicated with the volatile oil. The pine baths at these spas are not medicated with the *Krummholzöl*, but with a much cruder product, *viz.*, an extract obtained by evaporating a decoction of the wood and branches, and perhaps, also, the residue after the distillation of the oil. Moreover, the baths are mostly employed in rheumatism, gout, and other affections for which thermal baths are suited; while the inhalations are chiefly used in diseases of the respiratory tract. By improved apparatus and greater care in the selection of material, a much finer product is now obtained—in fact, a very pure essential oil—*Oleum Pini Pumilionis;* and this is what has lately been imported under the fanciful name *Pumiline.* This essential oil possesses in a high degree the odor of the most fragrant variety of the pine, and, moreover, is less irritating than other fir oils. Sprinkled or sprayed about a sick-room, it imparts a lasting and grateful fragrance to the air, which is not oppressive, and appears to be disinfectant; or it may be thrown into a little warm water and allowed to evaporate; or it may be diffused by a steam or hand-ball atomizer. The oil may be taken internally, and is admirably adapted for inhalation. It is better to diffuse the oil through water by the aid of magnesia, powdered silex or prepared talc, in the proportion of 40 to 60 grains of the oil to a scruple of magnesia and an ounce of water. A teaspoonful of this mixture added to a half-pint of cold water is to be stirred in inhaler, when the addition of a half-pint of boiling water gives a convenient temperature. The addition of this oil to creasote and other essential oils is advantageous, as it disguises the disagreeable odor of some and adds its fragrance to others. It mixes well with eucalyptol, and is much milder in its action than the *Oleum Pini Sylvestris* (Ph. B.). Internally it may be taken in doses of 5 minims or more, in capsules, on sugar, or in lozenges, like terebine; or a mixture may be made with the aid of gum tragacanth. Externally it may be applied on spongiopiline or flannel as a stimulant and counter-irritant.—PROSSER JAMES, M.D., in *The Lancet.*

Benzoate of Sodium is recommended by Parzevsky as a remedy in uræmic poisoning. From ʒi. to ʒij. may be given daily in solution or in capsules. It causes diminution and, finally, arrest of convulsive paroxysms and causes sleep of a healthy character. Excretion of albumin is also diminished or caused to cease entirely.

ECCENTRIC STIRRER.

A VERY efficient stirring apparatus, particularly serviceable in the preparation of cold cream, emulsions, pomades, soft ointments, and similar preparations, is the apparatus designed and manufactured by Beyer Frères, of Paris (Rue de Lorraine 16–18).

As will be seen from the cut, it may be set in motion by hand; but it is an easy matter to apply a pulley attachment, and this would probably be preferred by most users who have steam at their command. The construction of the apparatus itself is so easily understood from the illustration that it needs no further description.—DR. ST. MIERZINSKI in "*Die Riechstoffe*," Weimar, 1888.

Bottling Magnesium Citrate.

BOTTLES containing solution of citrate of magnesium may be securely corked by the following method used by N. Vanderbelt, Detroit. A tube of tinned copper 4 inches long is made of such size that the small end will be of the same diameter as the inside of the neck of the bottle, the opposite end should be large enough to receive the cork to be inserted. The cork is then easily forced into the bottle with a wooden piston having a shoulder to prevent is forcing the cork beyond the small end of the tube. The corks should be thoroughly boiled before inserting. The best corks to use are straight corks; such as are used by bottling houses.—*Pharm. Era.*

Eccentric Stirrer.

Electrified Balsam.

MR. C. V. BOYS has described an interesting experiment he has made with electrified gums and balsams. If sealing wax or any similar resinous material is melted in a cup and put on the conductor of an electrical machine, it throws out threads and fibres which break into beads. The cup containing the resin should be inclined from the operator and the electrical machine before the latter is worked, else both will be covered by an invisible sticky web. Burnt india rubber also sent out the filaments; but Canada balsam appears to show the phenomenon best. When a candle flame is held near a cup throwing out such filaments, they shoot to the flame, and sometimes cover the candle, and sometimes discharge into the flame and turn back into the cup. In a few minutes a large quantity of these sticky threads can be made and, as they break into beads, Mr. Boys points out that this plan can be used to powder the substances.—*Chem. and Drugg.*

Fermentation of Milk-Sugar.

FOR some time chemists have disagreed in respect to this question, some saying lactose cannot ferment, others maintaining that it can. M. Bourquelat, in a memoir presented through M. Berthelot to the Academy of Sciences, has explaned this apparent anomaly in a satisfactory manner. His experiments demonstrate that pure lactose, freed from the glucose which naturally accompanies it in milk-sugar, cannot be made to ferment with any sort of yeast, provided this be also purified from all fermentable sugar. But when glucose—the variety, for instance, extracted from milk-sugar—is added to the solution, fermentation immediately begins, and both sugars (lactose and glucose) split into alcohol and carbonic acid in the usual manner. The larger the proportion of glucose, the more rapid the transformation. With 50% of glucose eight days were sufficient for complete fermentation; with 16 per cent, twelve were necessary; and with 3 per cent, twenty-one days. Other experiments made with some crystallized lactose given by Professor Jungfleisch, and purified maltose, demonstrated that under their influence lactose will also ferment in substantially the same manner.—*Chem. and Drugg.*

Narceine related to Naphthalin.—From recent investigations of Messrs. Ad. Claus and Al. Meixner, of Freiburg i. B., published in the *Journ. f. prakt. Chem.*, it appears that narceine, one of the alkaloids existing in opium, is closely related to naphthalin. It is, however, not yet demonstrated that narceine contains the naphthalin nucleus *as such*, but only so much, that it contain a nucleus which, under certain conditions, may change to that of naphthalin, and yield derivatives belonging to the latter body.

RAPID FILTERING APPARATUS.

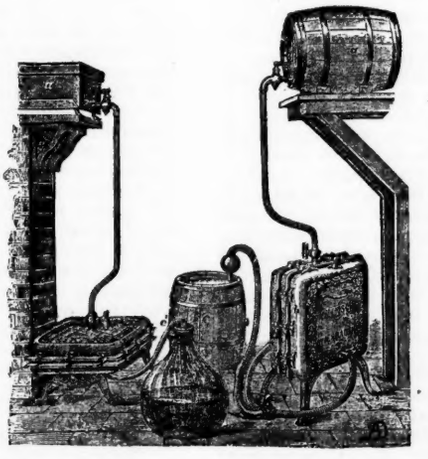
A RAPID filtering apparatus which may be used for viscid liquids, and is reported to work very effectively, is that constructed and sold by August Zemsch, of Wiesbaden.*

This apparatus consists of an upper and a lower portion or frame, and may be used either in a vertical or a horizontal position. At its lower portion (or upper, if reversed) is the inlet for the liquid to be filtered, and at the other end is the outlet. Between the upper and lower portion, a filtering plate is interposed which may be of different material, according to the nature of the substance to be filtered. If filtering paper is used, the joint formed by the frames is rendered sufficiently tight by the edge of the paper being inclosed by the flanges. If other filtering material is used, rubber washers may be placed between the flanges. Besides paper, flannel, cloth, felt, wire-gauze, etc., may be used as filtering surface, and charcoal or other solid filtering mediums may be placed between the filters. Before the turbid liquid enters the apparatus it may be passed through a strainer or sieve to keep back such solid particles as would soon choke the filtering surface. If this is not convenient, the filter inside of the apparatus may be covered with a sieve-like plate or some wire-gauze. The metallic parts of the apparatus may be tinned, nickel-plated or enamelled, according as it may be desired.

The turbid liquid enters at the bottom of the apparatus, passes through the filter and issues at the top. At least, this is the intention, the object no doubt being this, that the filtering surface may not be too soon clogged by adhering solid particles.

[In the illustration, the liquid apparently enters at the top; and passes out below. Of course, if the liquid is not too turbid, the filtration will take place in this manner just as well.]

This filtering apparatus is made either with a single or with a double frame, such as is shown in *b*. In this case, the apparatus is placed horizontally, and the turbid liquid enters between the filtering surfaces, passing through the latter into the outer receptacles.



Zemsch's rapid filtering apparatus.

Hydrobromic Acid.

HUGO ANDRES (in *Rundschau*) states that, in his judgment, the most economical method of preparing hydrobromic acid is to decompose barium bromide with sulphuric acid. Barium bromide is easily prepared by triturating together 100 parts of barium carbonate and 95 parts of ammonium bromide with a few drops of water, until a fine, uniform powder is produced. This is gently heated for some time, until no more carbonate of ammonium can be detected by a glass rod dipped in hydrochloric acid. The residue is dissolved in water, the solution filtered, and the filtrate evaporated. The resulting salt, barium bromide ($BaBr_2$), is dissolved in 2 parts of water, and the barium precipitated by the calculated quantity of diluted sulphuric acid (1 of acid, 3 of water). The filtrate is then suitably diluted to obtain the desired strength of hydrobromic acid, which may be obtained by taking the specific gravity. A 10% acid [at 15° C.] has the spec. grav. 1.077; a 25% acid one of 1.209.

Cocaine as an Antiseptic.

DR. KERTON, of Nancy, calls attention to the antiseptic properties possessed by cocaine, as being worthy of attention (*Lancet*, Feb. 11th, p. 299). He states that while administering cocaine internally, in doses of twenty-five centigrammes, or even more, he has remarked that the different secretions—sweat, urine, products of suppuration, and even fæces—all lose their fetid odor. He, therefore, suggests that cocaine should be tried experimentally as an internal antiseptic, as for instance, in the place of carbolic acid or corrosive sublimate in the adynamic stage of typhoid fever. He believes that if administered by the mouth or more especially in the form of enemata, cocaine would act both as a neurosthenic and as a disinfectant.—*Pharm. Journ.*

---

* Figured and described in: *Die Riechstoffe.* Von Dr. St. Mierzinsky. Weimar, 1888.

Gelatin Coating for Pills.

JOHN FINDLAY recommends as the best solution in his experience for use in coating pills extemporaneously with gelatin the following:

Gelatin (sheet)	1 oz.
Glycerin	2 oz.
Distilled water	8 oz.

These ingredients are to be placed in a saucer or deep plate, which is set over a pan half full of water standing on a small gas stove. When the gelatin is dissolved the gas is turned low so as to keep the mixture merely warm. The pills are stuck on needles, and when they have been dipped are stuck in a quantity of putty contained in a flat tin pan or plate, where they are left from four to six hours to dry. The pills may be varnished subsequently with a solution of tolu one part, ether four parts, which gives them a fine gloss, but diminishes their solubility.—*Pharm. Journ.*

A Quick Filter.

A. B. CLEMENCE recommends to use a combination of an ordinary filter, with the point cut off and replaced by absorbent cotton, as a superior quick filter, especially in connection with the filter-pump:

The filter is made as follows: A three-inch filter paper is folded as usual, and the apex cut off, leaving a hole about ¼ inch in diameter; a wad of cotton (the absorbent cotton of the druggists) is pressed into the apex, and, when wet, may be, either with a pump or by the mouth, pressed tight enough to hold the residue. Even without a pump, this filter will run so fast that close watching will be needed to keep the funnel full. Wash, as usual, with hot dilute hydrochloric acid and with hot water, when the residue cotton and paper is ready for the weighed crucible. Burning with a blast lamp completes an estimation in forty minutes from the time of weighing the material. [The author is describing the application of the filter to the estimation of silicon in pig iron.] The weight of the ash of the cotton will, of course, vary with the amount used, while that of the paper will be the same in each case, but it never need be more than 0.0005 gramme, and this small amount may be disregarded in most cases.—*Journ. Anal. Chem.*

Verifying Graduated Glass Tubes.

M. BERTHELOT describes (*Compt. Rend.*, 105, No. 15) a method employed by him in verifying the graduation of glass tubes employed in gas analysis, which is, however, equally applicable to any graduated tube or burette.

The author fills the tube with mercury when in an upright position, the closed end being downwards, until it overflows, taking care that no air-bubble is introduced. A small flat piece of glass, rather thick, is pressed down upon the open end of the tube, which is then inverted; the whole—tube, mercury, and glass plate—is then weighed on a balance sensitive to 0.01 Gm. or beyond. When this is done, the arrangement is taken out and placed above a small capsule, and one corner of the glass plate is raised slightly so as to permit a certain quantity of air to enter, and a corresponding quantity of mercury to escape. The contact of the plate and tube is re-established, the arrangement is placed upright on a large horizontal plane, and the graduation corresponding to a horizontal plane tangential to the surface of the meniscus is read off with a lens. He then weighs, as may be most convenient, either the mercury which has escaped into the capsule or the entire system formed by the tube, the mercury and the plate, which gives the mercury escaped by difference. This weight, divided by the exact density of mercury at the temperature of the experiment, furnishes with great precision the volume of the entire space now occupied by air and limited to the graduation. In this manner the graduation of any tube may be verified and a table of correction drawn up.

Suppository and Ointment Slab.

A CONVENIENT suppository and ointment slab, having several advantages over the loose pill tile, may be prepared as follows.

Obtain a piece of plate glass about 12x14 inches, and paste on one side a piece of perfectly white paper, having previously drawn on the side next to the glass, near one end, a scale divided into halves and quarters. The paper should then be sized with mucilage and given two coats of shellac varnish, to render it impervious to oils and fatty substances, should any work under the slab. Next obtain a half-inch board 14x24 inches and place the slab at one end, and in such a manner that there shall be an inch space on each side.

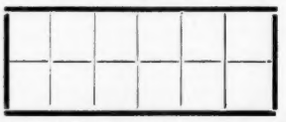
A strip of wood the same thickness as the glass should be tacked on each side of the slab, leaving an eighth inch space between the strips and the edges of the slab. The space should be filled with cement made of glycerin and litharge. After the cement has hardened it should be rendered impervious to fats by treating with a few coats of shellac. The remainder of the board unoccupied by the slab should be covered with a piece of board of the same thickness placed crosswise. The whole should be arranged to slide under the top of the prescription desk in such a manner that it may be drawn out just far enough to use.

The scale serves for the accurate division of the suppositories and the white background enables the operator to see when the ointment is uniformly mixed.

Should some prefer part of the slab ground, the object may be accomplished by placing emery or pumice stone and water on the slab and rubbing with another piece of glass.—*Pharm. Era.*

A Simple Pastil Mould.

MR. J. W. BOWEN, one of the members of the Board of examiners for England and Wales, has recently devised a very simple mould for pastils, which deserves to be generally known. It is intended more particularly for use at the dispensing counter, there being a growing tendency amongst medical men to prescribe pastils containing medicaments in doses to suit special cases. The want



of some apparatus which would insure accuracy of division was Mr. Bowen's guiding spirit in the matter. He takes a square piece of plate and cements on three of its sides narrow slips of plate-glass, as shown in the figure. The square is then divided into smaller squares by means of grooved lines, and a piece of glass to slip up to any row required, there to be secured by means of cork, serves to give the requisite surface. The diagram shows part of the plate arranged for a dozen pastils. The plate being ready, the pastil mass is poured into it, and when it sets the glyco-gelatin sheet is removed, when it is found that on the under surface are ridges corresponding to the grooves in the plate. All that remains to be done is to cut through these ridges with a pair of scissors, and the pastils are finished.—*Chem. and Drug.*

The Size of Drops.

ATTENTION has been called from time to time to the various conditions which modify the size of drops. For example, it was shown, in a paper published in this journal in July last, that drops increase in size as the quantity of fluid in the bottle from which they are dropped decreases. Mr. A. F. Reid calls attention in the *Chemical News* to two conditions which modify the size—viz., time and temperature. In his experiments he used a 100-grain pipette and found that water at 2° C. dropped from this at the rate of one drop per two seconds gave 141 drops to 100 grains, but only 136 drops when 2 or 3 drops are formed per second. At 170° F., water dropped at the rate of 2 or 3 drops per second gives 156 drops to 100 grains and the number falls 1 drop for every 10° F. decrease of temperature until 110° F.; then the number falls 2 drops for every 10° F. fall, from 90° F. to 40° F. at the normal temperature (60° F.) 141 drops weighed 100 grains. It is well known that the size of drops varies with the nature of the liquid. The following are the drop measurements of 100 fluid grains of some liquids at 12° C. at the rate of about two drops per second.

	Drops
Absolute alcohol	387
Ether	452
Carbon disulphide	428
Sulphuric acid	340
Hydrochloric acid	182

Mr. Reid suggests that this method may be used in determining the relative quantities of alcohol and water in mixtures of these liquids. Mr. Reid does not appear to have tested the influence of the size of the pipette aperture upon the size of the drops.—*Chem. and Drugg.*

Impure Salicylate of Lithium.

SOME sensation has been caused among French pharmacists owing to the appearance in the market of salicylate of lithium containing from 12 to 15 per cent of salicylate of sodium. Investigation has shown that this is not added, but is due to the use of impure carbonate of lithium in making the salicylate. The carbonate is made from lepidolite, which contains a considerable proportion of carbonate of sodium, a salt which it is difficult to get rid of. Consequently when the carbonate of lithium made from this source is used to saturate salicylic acid, salicylate of sodium is contained in the product. M. Guyot, who writes on this subject in *Répert. de Pharm.*, states that the impure salt comes from Germany, and mentions further that German carbonate of lithium frequently contains alumina and calcium carbonate.—*Chem. and Drugg.*

Note by Ed. Am. Dr.—Regarding the source of lithium carbonate and its manufacture, compare an article elsewhere in this number.

Oil of Green Cloves.

We are dependent upon Zanzibar as the chief source of the supplies of cloves and their oil which come to our markets, and the existence there of an ad valorem duty of 30 per cent—the principal source of the sultan's revenue—makes it highly important that other sources of supply should be fostered. The Moluccas are, perhaps, the next most important producers of cloves, and next to them are the Straits Settlements, Mauritius, and the Reunion. Cloves are remarkable for the large amount of essential oil which they contain, no official drug exceeding them in this respect. From 16 to 22 per cent has generally been considered to be the range of the yield, but of late years Zanzibar cloves have stubbornly refused to give more than 17 per cent. The Mauritius cultivators have recently endeavored to improve upon this by using the cloves in the green or undried condition, and the experiment has been attended with excellent results. A small consignment of the oil thus prepared has recently been received in London. In color, odor, and taste this oil resembles ordinary oil of cloves; if anything, the odor is more fragrant, owing to the flower-buds being put into the still before they are dried. The oil has a specific gravity of 1.048 at 18° C., is soluble in less than its own weight of rectified spirit, and conforms to the reliable chemical tests for oil of cloves. It therefore corresponds with the official requirements, and is entitled to become a commercial article.—*Chem. and Drugg.*

The Nilgiri Cinchona Plantations.

Although about 300,000 cinchona trees were destroyed by a landslip in the Nilgiris in June of last year, and 20,000 more by a hail storm earlier in the season, the sales of febrifuge during the year 1886–87 were 385 lbs. in excess of those of the previous twelve months. Yellow and hybrid trees were largely substituted during the year for red cinchonas. The bark of the two former being rich in alkaloids, it is the object of Government, by working out the red-bark growths, to procure cinchona estates which will give quinine and some combination of quinine and cinchonidine at almost as cheap a rate as the febrifuge obtained at present from the red-bark trees. The cost price of the raw material used in the local febrifuge factory during the year amounted to Rs. 73,548, while the outturn yielded Rs. 113,152. Deducting from the money received for febrifuge and bark during the year and value of the stock in hand at the close, the working expenses, there was a profit of Rs. 18,464, a much less favorable result than was obtained in several former years. Commercially, therefore, the year was a bad one; but this is counterbalanced by the advantage gained in the cheapening of the drug, which, after all, was the principal object of the Government in introducing cinchona cultivation into India. Meanwhile the Government has asked the superintendent to keep down expenditure on the plantations and to push on the experiments in the manufacture of quinine.

Annatto Cultivation in Guadeloupe.

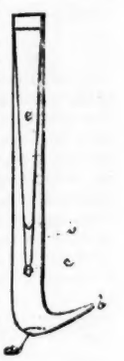
Annatto thrives best in Guadeloupe at an altitude not exceeding 400 meters. Holes, having a diameter of fifty or sixty centimeters and thirty or forty centimeters in depth, are dug at a distance of three to four meters, and in each of these a few seeds are laid. When the young shoots appear, one of the strongest is left to grow and all the others are pulled up. The young plants require a careful hoeing around them for nearly a year on the whole extent of the plantation. In nurseries the seeds are sown in well-prepared beds, and at a distance of about thirty centimeters between each row, and when the plants have attained a height of about forty to sixty centimeters they are placed singly in each hole. The plant grows very fast, requiring little care after the plantation has attained a certain size. It blossoms one year after being transplanted, and bears a few pods, but is far from having reached its full size, which may be four to five metres. In a rich soil the trees will shade the whole ground in four or five years. The ground is hoed at least two or three times a year, until the trees have attained their full size. Annatto flowers twice a year, the spring blossoms always yielding the largest crop. As soon as the pods in the bunches commence drying and opening, the bunches are cut, packed in baskets, and transported to the shed prepared for the purpose. Every pod must be then picked with the hands, the seeds attached to the white film inside being as much as possible left untouched. The empty pods are used as manure. The picking in Guadeloupe is usually performed by women and children, who are paid at the rate of about five centimes per kilogramme.

The crop is gathered from July 15th to the end of August, and it is estimated that one hectare (2.47 acres) of annatto yields on an average 1,500 kilogrammes of green seeds for the two crops, or about seven casks of pulp, weighing from 350 to 400 lbs. each.—*Chem. and Drugg.*

TESTING FOR SMALL QUANTITIES OF CARBONIC ACID AND OTHER GASES.

Oscar Roessler recommends to use the simple apparatus here described.

A small test-tube is drawn out at its lower end, the latter bent slightly upwards, and the extreme end (*b*) cut off. From another thin-walled glass tube a capillary funnel (*e*) is formed, so as to fit into the test-tube in such a manner that the orifice is about ¼ inch from the bottom. The sample to be tested is placed into the outer tube (at *a*), and if carbonic acid is to be tested for, a small quantity of clear solution of baryta is placed into the capillary funnel—just enough to be retained therein by capillary attraction. The small column of liquid will occupy the space indicated by *d*, and a single drop of the solution will hang at the orifice (*c*). The whole apparatus, put together as shown in the cut, is now dipped into dilute hydrochloric acid, which will enter at *h*, attack the sample at *a*, and, if this contains carbonic acid, will liberate this and cause the drop of baryta solution to become opaque. Even if the apparatus is taken out of the acid, the orifice at *b* will remain closed, as this will retain a small portion of the acid by capillary attraction. The reaction may be repeated a number of times. It is only necessary to cause the drop (*c*) to fall off by a gentle shake, when it will immediately be replaced by another from the space *d*, until no more can be shaken out. The old drop, falling into the acid liquid, will of course again give up its carbonic acid.



In the same manner other gaseous bodies may be detected.

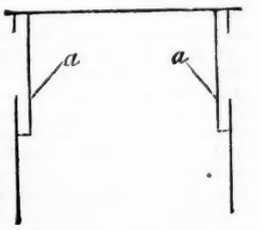
For instance, supposing nitric acid is to be searched for, the funnel (*e*) is charged with a concentrated solution of green, crystallized sulphate of iron, and the sample, mixed with an excess of chloride of sodium, is placed at *a*. The apparatus is then immersed in concentrated sulphuric acid. The latter causes the escape of vapors of chloronitrous and chloronitric acids, and causes the drop of iron solution to assume an intense brownish-black color.

According to the author, so small a quantity as 0.02 milligrammes (about $\frac{1}{3200}$ grain) of carbonic acid gas may be detected with this apparatus.—*Berl. Ber.*, 1887, 2,629.

APPARATUS FOR SEPARATING IMPALPABLE POWDER.

When powders are to prepared of greater fineness than would be possible to obtain by means of a sieve or bolting cloth—for instance, when a powder is to be incorporated into toilet soaps—this may be accomplished by a sort of dust-collector.

This consists simply of a pasteboard tube, about 1 foot in diameter and 9 feet high, standing on a square box provided with a well-fitting door. Immediately over the latter, a blast-tube enters the apparatus. The tube enters first horizontally, but its point is bent upwards at a right angle. The upper end of the large pasteboard tube is covered with a pasteboard cap (shown in section in the accompanying illustration). This cap has an interior flange *a a*, forming a gutter in which lodge the finest particles of the powder which are thrown upwards. A removable lid covers the top.



When a substance has been reduced to powder in the mortar, it is transferred into a suitable tube, the latter connected, at one end, with bellows, and the other end of the tube connected with the blast-tube entering the apparatus before described. Upon operating the bellows, the powder will be forced into the chimney from below upwards. The coarser particles of the powder will, of course, fall immediately back into the box at the bottom, and the finer particles somewhat later; but the finest dust will ascend and collect in the gutter at the top, whence it may be removed from time to time. When the charge has all been blown in the apparatus, and the suspended particles have all settled, the sediment in the bottom of the box is removed to the mortar and subjected to renewed trituration.

The long pasteboard chimney is constructed of several sections fitting one over the other, so that it may be lengthened or shortened, like a telescope, according to the nature of the substance of which the fine powder is to be collected.*

* After Mierzinski, *Die Riechstoffe*, Weimar, 1888.

Drying Agent for Gases.

MORLEY has examined the drying power of phosphorus pentoxide (anhydrous phosphoric acid) towards currents of air or gases. He finds it to be the most powerful absorbent of moisture so far available. On passing a current of air through suitable tubes containing phosphorus pentoxide, the author ascertained that only ¼ milligramme of moisture was left unabsorbed in a volume of 10,000 liters, or 2,615 gallons.

Sozoiodol.

"SOZOIODOL," the name given to a new iodine compound which has been recommended by Dr. Lassar for use in the treatment of certain skin diseases, is a fresh instance of the bewildering confusion that is continually augmenting through the arbitrary and unsystematic manner in which multitudinous new chemical competitors for favor are named. A first impression might naturally be that sozoiodol has some relationship with iodol; but this would be wrong, since iodol is an iodized pyrrol, whilst it is stated that sozoiodol is a benzene derivative. Looking in another direction, it has been described by more than one writer as a compound resembling ortho-oxyphenylsulphurous acid—which bears also the shorter name of sozolic acid—but with a third hydrogen of the benzene nucleus replaced by iodine. This, however, has proved also to be incorrect, as the compound is now authoritatively stated to be an acid sodium salt of "iodparaphenolsulphonic acid" (*Pharm. Zeit.*, Dec. 24th, p. 374). It is represented by the following curious formula:

$$2C_6H_3\begin{cases}I\\O.H\\S.O_3Na\end{cases} + C_6H_3\begin{cases}I\\O.H\\S.O_3H\end{cases}$$

Sozoiodol occurs as a white, shining crystalline powder, which does not melt upon being heated to 200° C.; but when heated sufficiently in a test tube, it is decomposed, and gives off violet iodine vapor. It is quite odorless, has a faintly acid taste, is soluble to the extent of seven per cent in cold water, and more soluble in hot water; it is also difficultly soluble in cold alcohol, but more freely in hot.—*Pharm. Journ.*

Filtration of Mercury.

MERCURY often becomes contaminated with alloys or other impurities which may be removed by simple filtration. This may be done in glass funnels, the stems of which are drawn out to a fine capillary tube. But this becomes often clogged after a short time, and then ceases to act; besides, it acts very slowly.

Prof. C. Bohn, of Aschaffenburg, recommends a method which has long been practised in Bunsen's laboratory. A filter is made of writing paper and numerous fine holes pricked into it. Instead of making these round with a needle, it is better to use the point of a pen-knife, which causes the little holes to be oblongly triangular. The holes should be pricked both vertically, in the direction of the radius of the filter, and horizontally, at right angles with the former; part of the holes should be pricked from the outside inwards, and the others in the opposite direction. Even with this arrangement, the filtration sometimes proceeds only very slowly, but it may be accelerated by using a filter-pump.

A still better way to purify mercury by filtration, according to the same author, is the following: Select a glass tube, of about the thickness of a lead-pencil, and about a yard long. Expand one end to the shape of a funnel, and the other to a tulip-shaped bulb, or expand this end in a wave-like form, such as is customary when rubber tubing is to be stretched and tied over the end of a tube. A piece of linen or chamois is firmly tied over the latter end, and the tube then suspended. On pouring the mercury into the funnel, it will be pressed through the pores of the filtering medium with a pressure considerably exceeding that of the atmosphere.—*Zeitsch. f. Instrumentenkunde.*

Syrup of Hypophosphite of Iron (ferrous).

MR. H. C. EVERSON, in a paper published in the *Pharm. Journ.* (Dec. 24th), states that the usual methods for preparing syrup of hypophosphite of iron (ferrous) result in the production of *ferric* hypophosphite. The formula given by the formulary of the British pharmaceutical conference, however, does produce the ferrous salt, but suffers from other drawbacks. He proposes a new method by which this syrup may be produced without difficulty. We reproduce the process here, transcalculating the British weights and measures into those of the United States as closely as practicable. The author started from the fact that metallic iron dissolved in hypophosphorous acid gives a solution of ferrous salt. He, therefore, dissolved a calculated quantity of iron wire in a sufficient quantity of hypophosphorous acid of spec. grav. 1.136, boiling them in a flask, the neck of which was closed by the nozzle of a small funnel to prevent evaporation and exposure. After the iron was dissolved, the solution was filtered, while hot, upon the sugar, and the latter stirred until it was dissolved. The result was a bright syrup containing 1 grain of ferrous hypophosphite in each fluidrachm (British), and was free from ferric salt, for potassic ferrocyanide gave only a very pale blue precipitate. The whole operation was effected in a very short space of time, and the author states that the syrup has kept perfectly bright in full bottles.

The formula is as follows, reduced to make 16 fluidounces (U. S.).

Iron Wire, pure and fine	41 grains.
Hypophosphorous Acid, spec. grav. 1.136	385 minims.
Sugar	11¼ troy oz.
Water	enough to make 16 fl. oz.

Boil the iron wire with the acid and 7½ fluidounces of water until it is dissolved; filter the solution, while hot, on the sugar, and stir until solution is effected. When cold, complete the volume to 16 fluidounces.

Analysis of Papaw Juice.

THE juice of the papaw, *Carica Papaya* L., from which the vegetable ferment papain (or papayotin) is derived, has been analyzed by Domingo Alberto Niobey of Rio de Janeiro. He found it to contain:

Caoutchouc-like substance	4.525
Wax-like substance	2.424
Soft Resin	0.110
Hard Resin	2.776
Albuminoid substance	0.006
Papain	5.303
Bitter extractive	1.283
Saccharine extractive	1.059
Organic Acid (malic)	0.443
Pectin and Salts	7.100
Water	74.971

—*Deutsche Chem. Zeit.*

[Of all these constituents, the one which interests us most is the papain. The author's estimate of its quantity comes probably very close to the truth, though the apparent exactness of the analysis, going into the third decimal, and accounting for every constituent in 100 parts without having to record any loss, does not strike us as being altogether convincing, not to mention the peculiar classification or denomination of some of the constituents.—ED. AM. DR.]

Metallic Oxides.

A PAPER on the dehydration of metallic oxides by heat has recently been contributed to the Chemical Society by Drs. Carnelly and Walker, and is published in full in a recent issue of the journal of the society. It is of considerable interest to pharmacists, for the observations which the authors have made regarding argentic, bismuthic, ferric, and mercuric oxides may be found to alter our ideas regarding the chemical composition of the pharmacopœial compounds equivalent to those named. Drs. Carnelly and Walker prepared these oxides (properly speaking, hydroxides) by processes very similar to those prescribed by the Brit. Pharm., the chief difference being that, instead of drying the compounds by the heat of a water-bath, as the Pharmacopœia directs, they were dried in the air. So obtained, the silver compound had the formula AgOH; on heating up to 100° C. it remained stable, and was only fully converted into Ag_2O between 180 – 270° C. The air-dried mercuric "oxide" (corresponding to hydrarg. oxid. flav.) had the formula $Hg(OH)_2$, and remained almost stable up to 100° C., began to dehydrate at 110° C., and was not completely dehydrated until the temperature of 175° C. was reached. Bismuth "oxide" required even a higher temperature for complete dehydration. As precipitated it has the formula $Bi_2O_3,3H_2O$, but on heating it immediately begins to lose water, and at a temperature of 415° C. its formula still showed combined water (Bi_2O_3,H_2O), complete dehydration only taking place at 600° C. In the case of these three "oxides" the Pharmacopœia directs the freshly precipitated substance to be dried by means of a water-bath, and assumes that the products are respectively Ag_2O, HgO, and Bi_2O_3; but it is evident from Carnelly and Walker's results that the Pharmacopœia formulæ are open to doubt, and require corroboration. There should be no doubt about the matter were the Pharmacopœia compounds air-dried, but as they are dried at a temperture something under 100° C. immediately after their precipitation, it is just possible that they are hydroxides or hydrates, to use a more common expression. For this reason, it is desirable that the subject should be investigated in anticipation of the next edition of the Pharmacopœia, and the composition of ferri peroxidum hydratum may be included. The Pharmacopœia gives the formula of this as Fe_2O_3,H_2O. Muck found that the hydrate precipitated in the cold and dried at 100° C. has the formula $Fe_2O_3(H_2O)_2$. The air-dried hydrate made by the above-named chemists contained five molecules of water, became $Fe_2O_3(H_2O)_2$, at 55° C., and at about 120° C. the composition corresponded with the Pharmacopœia formula. It may be mentioned that the precipitate obtained by decomposing antimony tartrate with an alkali was true Sb_2O_3, and this compound remained stable on heating up to 360° C., when it began to absorb oxygen.—*Chem. and Drugg.*

Coca Cultivation in Ceylon.

A CORRESPONDENT in the *Tropical Agriculturist*, who has been growing coca for some years chiefly for the seed, and is now extending the cultivation in view of leaf harvest, which promises to be most remunerative, writes as follows concerning the cultivation of the plant: Germination commences on the tree, as may be ascertained by dissection of the fruit. Seeds should, therefore, be sown while quite fresh on the surface of good loam, and shaded from the sun. After this no special cultivation is required. The plants can be put out like tea, three to four feet apart, in good land and sheltered, which they prefer to poor soil and exposed ridges. Markham states that the average yield of leaf in Peru was 800 pounds per acre, and that the profit from a coca farm was 45 per cent. This seems too good to be true; but even at 9d. per pound (present price of leaf in London averaging 1s. 3d.) the profit should be considerable. Machinery is not required, and the trees may be allowed to run at their own sweet will, leaves being taken off as fast as they arrive at maturity. Fruit bearing commences at eighteen months, and, when seed is no longer required, can, of course, be checked, and the energies of the plant directed to producing leaf.

The Turkey Sponge Fisheries.

SPONGE fishing extends all along the coast of Batroon, Tripoli, Latakia, and the island of Ruad, north of Tripoli. It is not confined only to native fishermen, for many Greeks come over from Kalimno, Stanchio, Rhodes, and Samos, in their little crafts, to share this traffic with the Syrians. The catch commences in June and extends to October, this season being the most suitable owing to the calmness of the sea. The diver generally remains at the bottom of the sea from sixty to eighty seconds, unlike the Australian pearl-shell fishers, who often remain under water for hours at a time. This is due to the fact, that the native Syrian diver has simply an open net around his unprotected body and uses no instrument of any kind in collecting his sponges; he cannot be induced, like the Turks, to adopt the diving dress or "Skafander." The depth to which Syrian divers descend is from 25 to 175 feet; below these depths no good sponges are said to be found. Three kinds of sponges are known here—prime, seconds, and the red ones, taken near Batroon. The latter are by far the best. They have to be cleaned and freed from sand and then pressed. The best qualities are exported from Beirut to Paris direct, the others go almost exclusively to Trieste, while the Greeks send their share of the catch to different markets in Europe. The average annual catch is estimated at about $150,000 in value. The local authorities exact a tax of 10 per cent from those engaged in the business.—U. S. CONSUL BISSINGER in *Consular Reports.*

Vanilla Culture in Mexico.

THE *Republican*, of St. Louis, some time ago, contained the following note on vanilla cultivation in Mexico, communicated by C. B. Pedretto, of Mexico:

"Vanilla flourishes in two places in Mexico, Papantea, in the State of Vera Cruz, and Misantia, but the first place is the most important. This town, of about 10,000 inhabitants, is in the land of the Toconaco Indians, who are as indolent and improvident as any people on earth. Vanilla is found wild in the forests around Papantea clinging to the trees and bushes for support. When the beans ripen in November or December the natives go out into the forests to gather them. All kinds are put into old sacks together and brought into Papantea to market. Here there are a number of buyers, Spaniards or Americans, and the competition reminds one of what is to be seen in a street where second-hand stores prevail. The old women are generally in the lead, half-naked, and with haggard faces begrimed with dirt. Then come the children, equally pitiable in appearance, and finally the old men bring up the rear, their long, stiff hair, matted and dirty sometimes, standing out twelve inches, while their beards, filthy and long, lend a finish to the picture that is most revolting. The beans are purchased by middlemen at the rate of 42s. or 50s. per 1000, taken as they are put up by the natives. One thousand good-sized green vanilla beans will weigh 60 lbs.; the same when cured about 10 lbs. The first fine morning, planks are arranged and covered with quilts on which the beans are laid after being divested of their stems. The sweating process, as it is called, then takes place, and has to be repeated seven times before all the water has evaporated. Then the beans are heated slightly and placed on shelves to dry and air. After this they are assorted in lots of fifty beans, graded according to length. In fine weather the curing process takes three weeks, but such weather rarely prevails, and the curing sometimes takes from four to five months. Last year the beans sold for 50s. per 100, which was about a pound, but owing to a heavy crop this year and the growing competition in the business, the best beans only bring 50s. a pound or 100, and the inferior from 30s. to 42s. The principal markets for vanilla beans are New York, St. Louis, and Chicago. They are bought chiefly by wholesale druggists and fine confectioners, and are becoming an important article of Mexican commerce. Last year, from the vicinity of Papantea alone, 60,000,000 beans were exported.

Dextrin as an Adulterant of Extracts.

A. PANNETIER directs attention (*L'Union Pharm.*, Feb., p. 50) to the frequent adulteration, in France, of pharmaceutical extracts with dextrin. This seems to be added with a double motive. While increasing the bulk, it also allows the evaporation to be stopped at an earlier stage of the evaporation. It is detected by adding subacetate of lead to the aqueous solution of the extract to precipitate tannin, gum and coloring matters; filtering and removing the lead by hydrogen sulphide; after again filtering, the liquid is evaporated to about one-fifth of its bulk and its own volume of 96% alcohol is added, when the presence of dextrin is detected by a precipitate being formed. The extracts containing dextrin present a fine appearance rather than otherwise.—*Pharm. Journ.*

Adulteration of Anise with Conium Seed.

SOME time ago, attention was called in the pharmaceutical press (by Mr. C. L. Lachman, of Bethlehem, Pa., in this Journal, 1887, p. 81) to a prevailing dangerous adulteration of the anise of commerce with conium or hemlock seed. A Turkish journal, in mentioning this adulteration, places on record a case which occurred some time ago at Tchataldja, a village in the neighborhood of Constantinople. A policeman there noticed a party of gypsies actively engaged in gathering hemlock seeds in the fields. Knowing this seed to be a poison, he stopped the collectors, and asked the purpose for which they gathered it, and it transpired that the gypsies collected the hemlock for druggists who paid them at the rate of 1d. per pound, and used the seeds as an adulterant for anise. The local authorities thereupon visited the drug dealers in the neighborhood, and seized large quantities of adulterated anise.—*Chem. and Drugg.*

Sophistication of Strophanthus Seeds.

AT a recent meeting of the Paris Society of Pharmacy (reported in the *Chem. and Drugg.*), M. Planchon spoke of strophanthus seeds, showing fine enlarged drawings of the various sorts, communicated by M. Dauvel. The variety of seeds in commerce is very great and frauds appear to follow apace. M. Blondel has called attention to a deceit often practised, it was said by English houses. The seeds were *exhausted* with strong alcohol. The fraud is detected through the dull appearance of the drug, and the absence of bitterness. Lately, however, the same gentleman received strophanthus kombé seeds, from England also. They looked very bright and fine, but the absence of bitterness led to a closer examination, which proved the seeds to have been exhausted with *weak* alcohol and mixed with some good seeds. The defrauders—very smart people, evidently—had profited by the caution published by M. Blondel, and changed their menstruum, so as to exhaust the drug without injuring its appearance. In the same discussion M. Petit said he had received specimens of Senegambia seeds priced at 250f. a kilo, while another called Nyanza strophanthus was offered at 43f.

Detection of Strychnine for Toxicological Purposes.

IN toxicological research, strychnine is generally detected by the process devised by Girdwood and Rogers, which has various objectionable features about it. Mr. R. A. Cripps, by a modification of Stas' process, has succeeded in separating the alkaloid much more quickly. He digests the solid substance in six times its weight of methylated spirit, containing a little tartaric acid. This is done for several hours at a temperature a little below the boiling point of the spirit. The liquid is then filtered, evaporated, and the residue dissolved in 1 oz. of water, and 20 minims of spirit added. The solution containing suspended matter is then repeatedly shaken with a mixture of equal parts of chloroform and ether, until all coloring matter is washed out. The chloroform washings are rejected, the aqueous fluid is rendered alkaline with ammonia, and again shaken with chloroform-ether to dissolve out the alkaloid, which again is re-extracted with acidulated water, the solution rendered alkaline with ammonia, and the strychnine finally dissolved out with chloroform-ether. The method can also be used quantitatively with very satisfactory results, if the ethereal and other liquids be washed by a second or even a third treatment with the solvent employed. To test its accuracy, 0.9 grain of strychnine was introduced into a dead cat, and the stomach, etc., treated as described; 0.85 grain of pale yellowish, well-defined crystals was obtained.—*Chem. and Drugg.*

Cotton-Seed Oil in Olive Oil.

To detect the adulteration, M. Ernest Milliau recommends to dissolve in three times their volume of 90% alcohol the fatty acids separated from the oil in the usual manner. The liquor being placed on a water-bath, one-tenth of its volume is added of 3-per-cent solution of nitrate of silver. After a few minutes' ebullition, should any cotton-seed oil be present, the nitrate will be reduced, and the fatty acids, blackened and paste-like, come up like a scum to the surface. No such reaction is observed with the fatty acids of pure olive oil. With this method 1 per cent of cotton-seed oil can be detected, and dangers of error are avoided, as the preparation of the fatty acids and their solution in alcohol insures a removal of natural organic and mineral impurities. Such is the substance of a memoir presented on February 20th to the Academy of Sciences by M. Debray, in the name of M. Ernest Milliau.—*Chem. and Drugg.*

Detection of Spermaceti in Oil of Rose.

SPERMACETI is known to have been used to some extent as a secondary adulterant of oil of rose, after this had previously been adulterated by the admixture of oil of rose-geranium or other oils containing only a small proportion of stearoptens. Genuine oil of rose congeals at about 50° C. to a semi-transparent mass, apparently consisting of spiculæ or scales. To produce this appearance in spurious oil, spermaceti has been used.

G. Heppe recommends the following test to discover this adulteration. Agitate a portion of the suspected oil with 1½ to 2 volumes of liquid glacial acetic acid. After a few minutes, the mixture will solidify to a crystalline mass. Transfer the mass to a small filter and wash it with water, until it has lost nearly all odor of oil of rose. Then wash it with a little solution of soda, and lastly again with soda. The undissolved residue consists [usually] almost entirely of spermaceti. It may be identified by transferring it to a dry test-tube and heating it until it turns brown, when a characteristic odor of fatty acids will be evolved.—*Zeitsch. f. anal. Chem.*

Rapid Assay of Peroxide of Hydrogen.

CONTAMINE recommends the following method for rapidly assaying peroxide of hydrogen.

Measure off several cubic centimeters of the peroxide, render it neutral by the addition of ammonia, introduce it into a measuring cylinder, divided into $\frac{1}{10}$ cubic centimeters and closed at one end, read off the volume, and then introduce a few crystals of permanganate of potassium wrapped in tissue paper. Close the orifice of the tube and shake briskly. The reaction will take place at once; every molecule of the peroxide corresponds to 1 molecule of oxygen. When the liquid has assumed the red tint of the permanganate, the reaction is terminated. The measuring tube is then opened under water, and the level again read off. The difference between the first and second reading gives the quantity of the oxygen, contained in the peroxide, in cubic centimeters.

Every C.c. of the usual commercial peroxide of hydrogen, when decomposed by permanganate, yields on an average 10 to 12 C.c. of oxygen.—*Dingl. Pol. Journ.*

Assay of Commercial Carbolic Compounds.

THE following is an abstract of a paper by J. Muter and L. de Koningh in *The Analyst* (12,191; after *Journ. Chem. Soc.*):

1. *Carbolic Powders.*—Where the phenols exist in the uncombined state, they are extracted by methylated spirit from 75 grammes of the powder. Where the powder contains a lime base, a preliminary thorough trituration with a small excess of dilute sulphuric acid is necessary. The alcoholic extract is mixed with 200 C.c. of a 5-per-cent solution of sodium hydroxide, and the mixture is then evaparated to half its bulk. At this point any tar oils and naphthalene will separate, and are to be filtered off. The filtrate is further concentrated to 50 C.c. and transferred to a graduated tube. This, which is known as Muter's carbolimeter, is wide in the lower portion. At 65 C.c. it is narrowed to a neck, which is graduated up to 110 C.c. in 0.25 C.c. divisions. It is stoppered, and is furnished with a long, thin, stirring rod, the volume of which must be allowed for. The solution is made up to 65 C.c., 25 C.c. of strong hydrochloric acid are slowly added with stirring, and then enough dry common salt to render the phenols insoluble. The tube is plunged into water of 15.5° and the volume of the phenols read off.

2. *Liquid Carbolic Acid.*—If this contains excess of water, it will not give a clear solution with three volumes of benzene (benzol). The amount of water is ascertained by shaking 20 C.c. of the sample with 80 C.c. of a saturated solution of sodium chloride, and observing the diminution in volume. Tar oils are estimated by shaking 20 C.c. with 80 C.c. of soda solution (5 per cent), and a small quantity of benzene (10 C.c. for dark specimens, less for pale ones). The increase in the volume of the benzene gives the amount of tar oils. The remainder is taken as phenol and cresols.

New and Delicate Test for Morphine.

WHEN a solution of ferric chloride is added to a solution of a salt of morphine, a bluish-green coloration is produced. At the same time, in consequence of the reducing power of morphine, a part of the ferric chloride is reduced to the ferrous condition, as shown in the following equation:

$$2Fe_2Cl_6 + 2H_2O = 4FeCl_2 + 4HCl + O_2.$$

There is, however, a point of dilution (apparently about 1 in 2,000) at which the coloration is imperceptible, though the reaction represented in the above equation appears to take place even in the most dilute solutions.

On this reaction is based a delicate test for morphine and its salts in solution; for if such a solution be treated with ferric chloride and then with ferridcyanide of potassium, the latter will interact with the reduced ferrous chloride with the formation of Turnbull's blue, which appears either as a deep blue precipitate or a greenish-blue coloration, according to the strength of the solution of the alkaloid.

In a solution of one part of a salt of morphine in 20,000 parts of water, the coloration is intensely green, and in a solution of one part in 50,000, the shade is still deep, though lighter. A solution of 1 in 100,000 gives the same result on standing a few moments, the coloration, even in this dilute solution, being unmistakable.

Other reducing substances would, of course, give the same results, but in the absence of such substances, the above is a delicate confirmatory test for the presence of morphine. Several other alkaloids submitted to the above test did not give the coloration.

This reaction might be made the basis of a colorimetric process for the approximate estimation of morphine in very dilute solutions.—J. LISTER ARMITAGE in *Pharm. Journ.* (March 10th).

Separation of Paraffin from Liquid Hydrocarbon.

R. ZALOZIECKI has found that solid hydrocarbons (that is paraffins) may be separated from liquid ones by taking advantage of the great difference of their respective solubilities in amylic and ordinary alcohol. According to his investigations, 1 part of *paraffin* requires for solution

at	parts of
16°–18° C.	450,000 ethylic alcohol (75%)
16°–18° C.	370 amylic alcohol
2°– 4° C.	1,060 do.

One part of paraffin is also soluble at 16°–18° C in 12,000 parts of a mixture of equal volumes of ethylic alcohol (of 75%) and amylic alcohol, and 42,500 parts of the same mixture at 2°– 4° C.

It follows from these data that ethylic or common alcohol of 75% dissolves practically no paraffin at all; also, that the solvent power of amylic alcohol for paraffin is very much diminished by adding ethylic alcohol; and lastly, that a lowering of temperature reduces the solvent power very materially.

As the proposed method promises to be of considerable practical usefulness in the examinations of various kinds of petrolatum or other petroleum products used in pharmacy or the arts, the method of executing the process will be briefly described here. It may be stated that the author has succeeded, by means of his process, in separating and estimating the amount of natural paraffin existing in crude petroleum—a matter of considerable practical as well as scientific interest.

For the purpose of assay, a sample of the substance weighing between 10 and 20 grammes, or measuring the same number of centimeters, is placed into a beaker, mixed with five times its weight of amylic alcohol, and afterwards the same amount of ordinary alcohol (of 75%) is added. The mixture is allowed to stand, well-covered, during several hours (the longer, the better) in a cold place, if possible below 4° C. (40° F.), then passed through a dry and cold filter, and the residue on the filter washed with a cold mixture of 2 parts of amylic and 1 part of ordinary alcohol of 70%. The exact determination of the weight of the precipitated paraffin is best accomplished by extracting the residue with ether or benzin in a continuous extraction apparatus. For this purpose, the filter, with contents, is lifted out of the funnel, rolled somewhat together lengthwise so as to fill out the whole bore of the tube connected with the flask holding the volatile menstruum, and a condenser having been fitted to the tube, heat is applied to the flask which causes the vapors of the volatile menstruum to pass up, and afterwards to return condensed. At the same time, the filter and contents are kept hot by the ascending vapors. The contents of the flask are then deprived of the volatile menstruum by heating in a drying closet, and the residue weighed. To dry the residue completely, a temperature of 125° C. (257° F.) maintained for two hours is sufficient.

When examining crude oils, or other crude petroleum products by this method, the author recommends to use a larger quantity of the alcohol mixture—about ten times

that of the sample to be analyzed—and to let the mixture stand at least twelve hours in a cold place. This will do away with difficulties encountered in filtering. The final residue on the filter should be washed with the mixture before indicated, until the latter ceases to run off colored.

This method may also be used to determine the quantity of paraffin mixed with fatty acids, neutral fats, resins, resin oils, etc. All these bodies are completely soluble under the above-mentioned conditions, in the alcohol mixture. But the admixture of paraffin to *wax* cannot be detected by it, as beeswax is likewise precipitated by the mixed alcohol.—After *Dingl. Polyt. Journ.*, 297, 276.

Preparation of Hydriodic (and, incidentally, Phosphoric) Acid.

PROF. LOTHAR MEYER has recently published a paper (in *Berichte d. D. Chem. Ges.*, 1880, 3,381) on the preparation of gaseous hydriodic acid, which contains valuable hints for those who desire to prepare this acid for medicinal or technical purposes.

Prof. Meyer points out that the drawbacks inherent in all hitherto used methods of preparing pure hydriodic acid may be avoided by a very slight improvement, consisting only in the precaution to have *at all times* an excess of iodine present. The usual methods direct to add iodine to an excess of phosphorus. This is the cause of the generation of phosphoretted hydrogen and phosphonium iodide. [Phosphonium is the hypothetical group PH_4, corresponding to ammonium NH_4. Phosphoretted hydrogen, or phosphine, PH_3, is capable of combining with haloid acids: $PH_3 + HCl = PH_4Cl$ which is phosphonium chloride, PH_4I phosphonium iodide, etc.] The excess of iodine is so decidedly necessary that it is even faulty to remove any free iodine which may have been carried over by the gas with moistened phosphorus, as this may be the cause of accidents.

The reaction which takes place between phophorus and iodine:

P	+	5I	+	$4H_2O$	=	H_3PO_4	+	5HI
phosphorus		iodine		water		phosphoric acid		hydriodic acid

requires for every 100 parts of iodine nearly 5 parts of phosphorus and 12 parts of water, provided a very concentrated *hydriodic acid* is required. These proportions should be maintained, except that about 20 parts of water are preferably taken. The process is conducted in the following manner:

The 100 parts of iodine are placed into a tubulated retort the neck of which is turned upward, and about 10 parts of water are poured in. The other 10 parts of water are mixed to a thin magma with 5 parts of red phosphorus, and this is transferred to a funnel the neck of which is stoppered, not by a faucet, but by a long glass rod ground into the lower end of the funnel. This glass rod, and particularly its lower ground end, should not be too thick, as the magma of phosphorus would otherwise not easily pass by it. The funnel having been fitted in the tubulure of the retort, and the receiver, containing a suitable quantity of water, having been connected with the retort, the glass rod is *very carefully* drawn up so that *one* drop (no more) of the phosphorus magma may fall upon the iodine. This stage is the only one where *caution* is necessary. Should the operator, induced by the apparent failure of any reaction or its feeble progress, allow more phosphorus to reach the iodine in the beginning, the action would become uncontrollable and an explosion will generally result.

[*Note by Ed. Am. Drugg.*—We find, on trying this method on a small scale, that it is not always easy to restrict the quantity of phosphorus paste, in the beginning, *to just one drop*, if the funnel is charged with the whole of the magma, as above directed. The safest plan is to put into the funnel at first only so much of the magma that a raising of the glass rod cannot allow more than *one* drop to fall in. Afterwards the funnel may gradually be filled with the remainder.]

If the phosphorus is added at first quite slowly, and the reaction is allowed to moderate before adding more, the time will soon arrive when larger quantities of the phosphorus may be added at once, so that the whole operation may be completed within about fifteen minutes (when 100 Gm. of iodine are taken in operation). The whole reaction then takes place quietly and requires no heat until near the end. Any free iodine mechanically carried over by the hydriodic acid is almost wholly condensed in the neck of the retort. In order to prevent its passing over as far as possible, it is advisable to connect the retort with the condenser by means of a long, moderately wide glass tube, directed upwards, and to pass the current of gas first through a U-tube containing a little water. The best form of receiver is a pair of Woulff's bottles, connected by a siphon. In the first of these, the delivery tube ends immediately below the cork, the gas being absorbed by the water contained in the bottle with avidity. If desired or thought advisable, several of such bottles may be connected by tubes ending below the corks. When the reaction has almost ceased, a gentle heat is applied to the retort, whereby also some aqueous vapor is driven over which causes the iodine adhering to the walls to return to the retort. Should the iodine tint [of the contents of the retort] not disappear even after heating for some time, a *very small* quantity of iodine together with a few drops of water may be introduced. But care must be taken not to apply heat in presence of an *excess* of phosphorus, as this would cause the evolution of phosphonium iodide.

If the operation is to be repeated a short time afterwards, the residue may be left in the retort, and new quantities of iodine and phosphorus added. But if it is desired to utilize the ingredients of one operation to the utmost, the neck of the retort is directed downwards (after all the hydriodic acid has come over), a receiver, with well-cooled condenser, attached and heat applied, which causes the aqueous hydriodic acid remaining in the retort to distil over. If any free phosphorus should still have been present, a little iodine is added, or better, the liquid is diluted and filtered off from the phosphorus before being distilled. Finally there remains in the retort colorless, syrupy phosphoric acid.

Prof. Meyer obtained, from 100 Gm. iodine, 5 Gm. phosphorus, and 35 Gm. water, altogether 95 Gm. of hydriodic acid (instead of the theoretical quantity 100.8 Gm.). Of this amount, 57.5 Gm. came over directly as gas, and the balance (37.5) was distilled over in aqueous solution. When only 20 Gm. of water were used, he obtained 74.4 Gm. as gas, and 23.7 Gm. by distillation, together 98.1 Gm. The amount of water to be introduced in the receiver should be such that the resulting product will have the desired strength.

New Method for rapidly Evaporating Non-inflammable Solutions.

J. W. GUNNING describes a new method, employed in the Government laboratories of the Netherlands, for rapidly evaporating sugar solutions by means of heat applied over the *surface* of the liquid, instead of from the bottom, so as to avoid the spattering which is liable to take place when heat is applied in the usual manner. This method of heating is, of course, applicable to all other non-inflammable solutions, when the object is to evaporate them as rapidly as possible, with a view to ignite the residue.

The apparatus is very simple, and is readily understood without a drawing. It consists simply of an iron plate standing on four legs, having four openings, one near each corner, through which the tubes of four Bunsen burners are adjusted at such a height that the tops of the burners will be a little higher than the edge of the capsules (which should be platinum or other non-oxidizable metal) which will be placed on the iron plate. A second iron plate is then adjusted over the burners. When the four flames are lit, the upper iron plate causes the flames to spread out along the plate, and both the direct flame as well as the radiation from the upper heated plate will cause a rapid evaporation of the liquid in the capsules.—After *Zeitsch. f. anal. Chem.*, 1887, 726.

Standardizing volumetric Solution of Iodine.

WILHELM KALMANN has proposed a new method for standardizing or determining the exact titre of iodine solutions intended for volumetric use.

His method is based on the fact that, when iodine is brought in contact with a sulphite, the following reaction takes place:

Na_2SO_3	+	2I	+	H_2O	=	Na_2SO_4	+	2HI
sodium sulphite		iodine		water		sodium sulphate		hydriodic acid

that is, the whole of the iodine is converted into hydriodic acid. If the latter be now titrated with a soda solution of known strength (best very dilute), in presence of methyl-orange as indicator, the quantity of soda consumed until the liquid assumes a yellow tint corresponds to the amount of iodine. The sulphite of sodium used may contain sulphate as an impurity, but must not contain either hyposulphite or carbonate, because the free hydriodic acid would act upon either of these salts and falsify the results.

In practice, the operation is carried out as follows: A measured quantity of the iodine solution is put in a beaker, and then gradually mixed with just enough of a solution of sulphite of sodium (of any desirable strength) to cause the liquid to lose its color. All the iodine is now present as hydriodic acid. A few drops of solution of methyl-orange are now added (which imparts a rose-red tint to an *acid* liquid), and afterwards a $\frac{1}{10}$ normal solution of soda (or one even more dilute than this) is gradually allowed to flow in from a burette, until the rose-red tint of the liquid passes into yellow.

This method may also be used, vice versa, to determine the quantity of a sulphite, or of a mixture of sulphite and hyposulphite, provided no uncombined bases or carbonates are present. Supposing we had a mixture of sulphite and hyposulphite of sodium. On adding to an

aqueous solution of the mixture standard iodine solution as long as this is decolorized, the iodine consumed would represent both that which has reacted with the sulphite and produced hydriodic acid, and that which has reacted with the hyposulphite to form iodide of sodium. On now determining the quantity of hydriodic acid produced, as outlined above, we obtain the amount of sulphite present in the mixture. And the quantity of iodine consumed in excess of that represented by the hydriodic acid, is concerned in the reaction with the hyposulphite.—After *Zeitsch. f. anal. Chem.*, 1887, 727.

Resorcin in Sea-sickness.

RESORCIN is another addition to the long list of remedies for sea-sickness. Dr. Andeer states (*Lancet*, Jan. 7th, p. 39) that a single dose of from ten to twenty grains given early before vomiting removes the giddiness and nausea, and enables the patient to sleep comfortably. In persistent cases, large doses two or three times a day are said to produce excellent results. A ten-per-cent solution of resorcin has also been found useful in cases of laryngeal tuberculosis by Dr. Fronstein, who says that, although resorcin is not so powerful an anæsthetic as cocaine, it acts more satisfactorily in allaying the pain and distress caused by laryngeal ulceration of tubercular origin.—*Ph. Journ.*

A Suggestion for Bougie Moulds.

MOULDS for making urethral bougies are not yet considered as necessary implements in all "well-regulated pharmacies," yet sometimes a prescription is presented requiring some of these articles to be made, and we have to resort to tinfoil. Generally an elastic gum bougie is taken as a model on which to wrap the tinfoil; but the bougie being of the same thickness nearly all its length, there is considerable difficulty in drawing off the mould from the model. Often when we have succeeded in doing this we find that the bougie has acted as a piston and drawn the sides of the mould together, rendering it useless. This trouble may be obviated by using a piece of glass tubing same size as a No. 8 bougie. First draw out the end to a point and cut it off about an eighth of an inch from where the narrowing begins, then fuse again until the end is rounded off as the bougie is to be, taking care not to allow the aperture to close. This tube now forms the model upon which to shape the tinfoil moulds. The tinfoil slips more easily from the glass than from the elastic gum, and the little hole at the apex allows air to enter as the tube is withdrawn.—S. J. ELLIOT, in *Chem. and Drug.*

Antipyrin as an Anodyne.

THE list of affections or morbid conditions in which antipyrin has been found beneficial is constantly increasing. Not long ago, Prof. Ryerson reported that it produced very marked and prompt relief, taken internally as an anodyne, in acute and painful affections of the eye. This is confirmed by Dr. Wetherby (*Med. Record*), who had a patient afflicted with intense conjunctivitis of the right eye, extreme photophobia and lachrymation, and most intense periodical pain extending from the eye to the head and neck. He happened to have read Prof. Ryerson's article, and ordered for the patient six powders of antipyrin, of 15 grains each, with the instruction to take one immediately on reaching home, and to lie down. It turned out that only one powder was required to produce relief, the patient sleeping quietly during the whole night. Of course, a local treatment was employed for the inflammation in the eye, but whenever this was subsequently followed by a dose of antipyrin the patient remained free from discomfort and pain. Dr. Wetherby thinks that the antipyrin not only acted as an anodyne, but that it also had a controlling action on the inflammation, since the eye improved more rapidly than any other he had ever treated, which was similarly affected.

The Use of Salol in Rheumatism.

DR. DERCUM, in the *Journal of Nervous and Mental Disease*, speaking of the use of salol when wintergreen oil is not well borne, says: In my own experience, salol has special virtues of special application. It is an almost tasteless, fatty, insoluble powder, which is as bland and unirritating to the mucous membrane of the stomach as so much powdered paraffin would be. It is apparently not acted upon by the gastric juice, but depends for its digestion upon the pancreas. At least it is decomposed in the small intestine into salicylic and carbolic acids. This change likewise takes place when salol is mixed with pancreatic secretion or with pancreatic tissue outside of the body.

As far, then, as the stomach is concerned, it is innocuous and inert, and it frequently proves a grateful relief to that viscus, especially when the oil of gaultheria or the salicylate of sodium has been given for some time. Judging from my own experience, it is slower in producing its physiological action than the other salicylates. The effect is not as pronounced and much less prompt. That it is, however, efficient in the same class of cases as the oil of gaultheria there can be no doubt. I generally prescribe fifteen or twenty grains to be taken every three or four hours. The effect is gradually produced, and is manifested in large doses by more or less "cinchonism." Curiously enough, I have noticed that the ringing in the ears is less, but the deafness more marked, than from the gaultheria. Occasionally patients will mention the darkening of the urine due to the presence of carbolic acid.

Now and then patients object to the drug on account of its greasy feel and greasy taste, and sometimes of their own accord ask to be placed back on the gaultheria. Occasionally, of course, it is well to alternate the gaultheria, instead of with salol, with the sodium salicylate.

The Therapeutic Use of Quillaja Bark.

PROF. R. KOBERT, of the University of Dorpat, has published the first number of a collection of investigations made at the pharmacological institute of the University, one of which has as subject the active constituents of Quillaja, or soap-bark, and the author of which is Dmitrij Pachorukow, of Irkutsk, Siberia. We shall quote only a few of the more prominent results.

Prof. Kobert had already ascertained, some years ago, that the commercial saponin did not represent the full therapeutic power of soap-bark, or of whatever other source was used for its preparation. It had been customary to designate as saponin the precipitate which was produced by adding alcohol to a cold aqueous infusion of the drug. Kobert, however, found that the filtrate, which had previously been rejected, contained a very active substance, and finally he succeeded in finding a method by which the two most energetic substances contained in soap-bark, namely, quillajic acid and sapotoxin could be separated from each other.

Kobert's sapotoxin forms the principal subject of the author's paper. This substance is exceedingly powerful, but is contained in the bark only in a very small percentage.

Sapotoxin is remarkable through its solvent action upon the red corpuscles of the blood. But the same property also belongs to quillajic acid, and to the commercial saponin, though in a much lesser degree. Even in a dilution of 1 in 10,000 did the first-mentioned substance (sapotoxin) completely dissolve the red corpuscles.

Fortunately, however, this takes place only when the sapotoxin, etc., is directly introduced into the circulation (by injection). *None* of these substances are absorbed either by the *stomach* or *intestines*, the only effect which is produced, even by relatively large doses, being a local irritation with occasional vomiting. Even a mere hypodermic solution is followed by only slight effects, as it is but very slowly absorbed, which is shown, among other things, by the great local irritation thereby produced.

Sapotoxin, when actually absorbed, or when injected (in concentrated solution) into any involuntary muscle, diminishes or entirely destroys its vitality. It is also a poison, both for the motory and the sensory nerves, not only in their terminations, but also in their main branches.

In spite of of the apparently energetic and toxic action of sapotoxin—which, however, does not exert itself except when this principle is directly injected into the venous system—the employment of quillaja bark is not only theoretically indicated, but also advisable on practical grounds, especially in place of senega. Kobert had shown, already in 1885, that the valuable constituents of senega varied very much in different specimens of the drug, while those of quillaja were constant and were, moreover, present in nearly 5 times the quantity compared with those of senega. Besides, quillaja bark contains sugar, and is free from the exceedingly irritating and disagreeable substance which renders the administration of senega so objectionable. He also showed that the preparations of quillaja are better borne than those of senega; that the former is as valuable an expectorant as the latter; and that quillaja but rarely causes vomiting or diarrhœa.

Upon the basis of Prof. Kobert's experiments, Dr. Goldschmidt investigated the therapeutic effects of quillaja. He found that the latter promoted expectoration by inciting cough, and that it, at the same time, diluted the secretion, thereby facilitating its ejection. Other experimenters have confirmed these results.

From the experiences thus gained, the author—and, in fact, Prof. Kobert and his whole school—advocate the employment of quillaja and its preparations in place of senega as an expectorant. The preparation which has usually been employed, and with uniform success, is the following (converted into U. S. terms):

℞ Quillajæ	gr. 75
Tr. Opii	♏ 40
Syrupi	fl. ℥ 1
Aquæ	q. s. ad fl. ℥ 8

With 7 fluidounces of water make an infusion from the Quillaja, in the usual manner. Strain, add the Tincture of Opium and Syrup, and lastly, enough water, previously passed through the strainer, to make 8 fluidounces.

Dose: A tablespoonful every 2 hours.

THE

American Druggist

AN ILLUSTRATED MONTHLY JOURNAL

OF

Pharmacy, Chemistry, and Materia Medica.

VOL. XVII., No. 4. WHOLE No. 166.

FREDERICK A. CASTLE, M.D.....EDITOR.
CHARLES RICE, PH.D.....ASSOCIATE EDITOR.

PUBLISHED BY

WM. WOOD & CO., 56 & 58 Lafayette Place, N. Y.

SUBSCRIPTION PRICE per year, - - - - - - $1.50
SINGLE COPIES, - - - - - - - - - .15

Address all communications relating to the business of the AMERICAN DRUGGIST, such as subscriptions, advertisements, change of Post-Office address, etc., to WILLIAM WOOD & Co., 56 and 58 Lafayette Place, New York City, to whose order all postal money orders and checks should be made payable. Communications intended for the Editor should be addressed in care of the Publishers.

The AMERICAN DRUGGIST is issued in the latter part of each month, dated for the month ahead. Changes of advertisements should reach us before the 10th. New advertisements can occasionally be inserted after the 18th.

REGULAR ADVERTISEMENTS according to size, location, and time. Special rates on application.

EDITORIALS.

THE *Pharmaceutical Record*, having in mind certain proceedings in the New York City courts against pharmacists who used Croton water in place of distilled water, called for in prescriptions, says:

"We should like to know how much the effect of medicine is hindered when Croton water is used in prescriptions, and how much more efficacious the same remedy would be if dispensed with distilled water. We can readily understand that there are some kinds of water that are unfit for use, and that in some instances distilled water should invariably be used; but how much more effective would a dose of rhubarb and magnesia be if mixed with distilled water in place of filtered Croton water."

We hope that our contemporary may have its desire for information satisfied, although we cannot see that the information is likely to be of any practical value.

In connection with the question of substituting Croton for distilled water when the latter is prescribed, it is of no earthly importance to the pharmacist who desires to cultivate a prescription business, whether one is preferable to the other or not. The fact for him to keep in view is that he makes a business of preparing prescriptions according to formulas furnished him, and is receiving remuneration for doing so. Let him, therefore, use all the skill he is possessed of in the first particular and then get as good pay for doing it as he can. There are sufficient occasions for the exercise of professional opinion in other directions more profitable than this and he need not concern himself with the question raised by the *Pharmaceutical Record* for a moment, when he gets a prescription calling for *distilled* water. Indeed about as unprofitable a thing as he can do is to give his patrons an impression that he exercises his own judgment in regard to the propriety of following the text of prescriptions or using something which *he* thinks more desirable than the article prescribed.

It is not many years since a very accomplished pharmacist in this city practically ran himself out of a good business by volunteering advice to his customers with regard to the propriety of using what their doctor prescribed, or taking, instead, something which *he* could give them for less money than the prescription would cost them. It required only a few attempts of this kind to cause the doctors in his neighborhood to "boycott" his store and advise their patients to beware of him.

There is little doubt that the majority of physicians might learn something of the pharmacists who prepare their prescriptions; and in the case of choosing between distilled or filtered water, they might find, by a little attention to the matter, that the latter would answer quite as well for most purposes, but it is doubtful whether it would be politic for the pharmacist to volunteer the information; for it may be accepted as a rule that the greater the ignorance of a doctor is respecting such matters, the more intolerant he is of criticism in regard to them.

Our advice is to *use* distilled water when the prescription specifically calls for it, and be sure to use that which will bear the Pharmacopœial test, and then get pay for the extra labor which is involved. That is *business*.

DR. CHARLES HARRINGTON, of the Harvard Medical School, furnishes to the *Boston Medical and Surgical Journal* of March 1st a communication in which he narrates the circumstances attending the purchase of English wall-papers with the manufacturers' guarantee that they were non-arsenical. Tests made after their receipt by the Boston purchaser showed that arsenic *was* present and accordingly the Boston house objected to receiving and paying for them. The English manufacturer, thereupon, reiterated his claim that the papers were non-arsenical, and in proof thereof sent a testimonial from Prof. John Attfield, Ph.D., F.R.S., F.I.C., F.C.S., who said:

"Not one of these samples is an arsenical wall-paper; that is to say, not one of the pigments or color-giving substances on the papers is arsenical, and the paper itself of these paper-hangings is not arsenical."

"Pseudo-sanitarians sometimes report non-arsenical wall-papers as containing some ridiculously minute trace of arsenic. These alarmists might just as truly report some samples of common table salt as containing arsenic, for the delicacy of certain of the tests for arsenic is so great that traces can be detected in many things. But such traces are absolutely without significance from any sanitary point of view, either in salt, wall-paper, or anything else. Arsenical wall-papers have well-defined arsenical characters, were formerly common, and may now occasionally be met with. Neither of these samples is an arsenical wall-paper."

Following the receipt of this, analyses of these papers were made by Henry B. Hill, Professor of Chemistry in Harvard College; Dr. Charles S. Sanger, Professor of Chemistry in the United States Naval Academy; and by Dr. Harrington, who is the Assistant in Chemistry and Instructor in Hygiene in the Harvard Medical School, and the following table shows the results of their examinations as compared with those made by Prof. Attfield.

	AMOUNT OF ARSENIC IN GRAINS PER SQUARE YARD.			
No.	Hill.	Sanger.	Harrington.	Attfield.
1	4.66	4.08	4.40	....
2	0.85	0.73	0.90	....
3	0.93	0.73	0.82	....
4	0.63	0.71	0.78	....
5	0.21	0.23	0.28	....
6	0.12	0.04	0.14	....
7	0.10	0 08	0.13	....
8	0.21	0.22	0.22	....

According to the American analyses, *all* of the papers contained more than the permissible limit recommended to the National Health Society of England by its committee. In view of the reputation which Prof. Attfield has in this country, this result is certainly very surprising, but it shows how desirable it is to take such guarantees with great reluctance and caution. It is well understood by pharmacists and chemists that there are always to be found a certain number of chemists holding prominent professional positions who can be depended upon to furnish certificates which favor the interests of those who employ them, but we are loth to believe that Prof. Attfield is to be classed among them. He certainly owes it to himself to offer some explanation of such a decided variation between the results of his own analyses and those of the American analysts in the present instance.

Correction.

In the article on "Gleditschia triacanthos" by Mr. Abraham L. Metz, on page 1 of our January number, the words "Nessler's reagent" are used in place of "*Mayer's reagent*," which latter was used by the author, and which he meant to write (see second column, middle). Mayer's reagent, as will be known to most of our readers, is a solution containing 13.546 Gm. of mercuric chloride, and 49.8 Gm. of iodide of potassium in one liter of water, and is a very sensitive test for alkaloids.

Pharmaceutical Substitution.—A short time ago, a German association set itself the task of proving that the German pharmacists habitually substituted one ingredient for another when not in stock. Bogus prescriptions were, therefore, prepared containing unknown and absurd articles. One prescription read:

Aconit. Nap.
Tuber Cinereum.

Notwithstanding the fact that "Tuber Cinereum" is the "tubercle of gray substance at the base of the human brain," this article with aconite was actually dispensed and paid for in fifty-eight Berlin pharmacies. Other fancy ingredients, such as *Urticaria rubra*, *Pemphygus foliaceus*, etc., etc., were dispensed in seventy-seven pharmacies; only twelve refused them. When the hoax was complete, the whole bundle of prescriptions, together with the compounds dispensed, were submitted to the editors of the journals. The organs of German pharmacy admit the truth of the charge. The Berlin Pharmaceutical Society, at their last meeting, discreetly resolved to take no notice of the matter.

THE *Practitioner* announces the publication of a general index to its series of volumes, 39 of which have issued since its foundation. This will be a welcome piece of information to the readers of this valuable periodical.

The Nebraska Pharmaceutical Association is to meet in Lincoln on the 8th, 9th, and 10th of May.

The Louisiana Pharmaceutical Association holds its next meeting in New Orleans on the 10th of April. Exhibitors should address Charles K. Hall, care of E. J. Hart & Co., New Orleans, La., accompanied with a fee of $10.

College of Pharmacy of the City of New York.—At the Annual Meeting, held on March 15th, the following officers were elected:

President: Ewen McIntyre. Vice-Presidents: H. J. Menninger, George C. Close, W. L. Vennard. Treasurer: David Hays. Secretary: J. N. Hageman. Trustees for three years: Charles Rice, H. W. Atwood, B. F. Hays, J. T. Macmahan, F. F. Knapp.

The examinations of the two classes occupied not less than nine days, owing to the intervention of the severe storm of March 12th. As we are about to go to press, we can only state that the commencement exercises were held on March 28th at Steinway Hall, General W. T. Sherman delivering the address to the Graduating Class, and Mr. A. T. Brown, of the graduating class, delivering the valedictory.

Roll of Graduates of 1888:

1. *Roll of Honor:* George C. Diekman (Gold Medal). 2. Harvey S. Miles (Silver Medal). 3. Albert Niederer (Bronze Medal). 4 to 13: Oswald Richter, Otto Raubenheimer, F. G. Cough, F. P. Tuthil, Emil Weiss, W. R. Betts, Mrs. Rose Smith Brunner, John Harding, L. Freiberger, Gust. Richel.

The remainder of the graduates are the following:

Charles F. Antz, New York City; Martin Arnemann, Jr., New York City; George S. Baldwin, Gilboa, N. Y.; Charles W. Bartlett, Watertown, N. Y.; Anthony Bohata, New York, N. Y.; George B. Bosch, New York, N. Y.; Arthur Tappan Brown, Sag Harbor, N. Y.; Emil Buehler, New York, N. Y.; Frank K. Burr, Iowa City, Iowa; Charles V. Chase, Davenport, Iowa; J. Taylor Clark, Clifton Park, N. Y.; J. Miller Campton, New York, N. Y.; Evan Moss Davis, Brooklyn, N. Y.; John George Deckert, Brooklyn, N. Y.; August Diehl, Philipsburgh, N. J.; Frederick E. Dodd, Newark, N. J.; Cleon L. Doty, Glens Falls, N. Y.; Charles S. Ely Milton, Pa.; Denis A. Falvey, Flushing, N. Y.; Henry Fink, New York, N. Y.; August Frank, New York, N. Y.; John P. Frawley, Bangor, Maine; Ferdinand Freund, New York, N. Y.; Howard P. Guiney, Sioux City, Iowa; Leopold Hahn, New York, N. Y.; John Otto Herbig, College Point, N. Y.; Edward Hoeltz, New York, N. Y.; John M. Horton, Whitesville, N. Y.; Louis W. Jansen, Brooklyn, N. Y.; Robert Johnston, New York, N. Y.; W. W. Johnston, Newtown, N. Y.; W. A. Joye, Flatbush, N. Y.; John J. Kalisher, New York, N. Y.; Edward Katz, New York, N. Y.; William W. Keyler, Bloomfield, N. J.; John J. Kerwin, New Rochelle, N. Y.; George G. King, Rochester, N. Y.; J. Howard Leggett, Princeton, N. J.; Carl Ernst Levin, New York, N. Y.; Victor G. Lockwood, Mianus, Conn.; Rudolph William Martini, New York, N. Y.; Philip Mathy, New York, N. Y.; Charles Miehling, New York, N. Y.; Edward F. Miller, New York, N. Y.; William P. Miller, Siegfried's Bridge, Pa.; A. Eustace Muse, New York, N. Y.; William H. Nicholson, New London, Conn.; Emil Nowalk, New York, N. Y.; William C. Oetinger, Brooklyn, N. Y.; Neville J. Patterson, New Rochelle, N. Y.; Herman Popper, New York, N. Y.; Walter S. Reed, Long Branch, N. J.; John Graham Reeves, Yonkers, N. Y.; William P. Rich, Newark, N. J.; Armin Richter, Buffalo, N. Y.; Drahomir Ruzicka, New York, N. Y.; Albert Schurr, New York, N. Y.; Charles B. Sears, Auburn, N. Y.; Alfred R. Seebass, New York, N. Y.; James G. Shaffier, New York, N. Y.; Maxwell P. Simons, New York, N. Y.; Andrew G. Slonaker, New York, N. Y.; Miss Angela de Socarras, Puerto Principe, Cuba; G. F. Sorrow, New York, N. Y.; Albert Staudenmeyer, New York, N. Y.; David Strauss, Elizabeth, N. J.; Richard Sunderman, Bergen Point, N. J.; Fred. Clarence Viele, Glens Falls, N. Y.; August Volland, New York, N. Y.; Louis Wedel, Brooklyn, N. Y.; Leon Wernert, New York, N. Y.; Joseph Wuelfrath, New York, N. Y.; Herbert Ziebarth, Brooklyn, N. Y.; Arthur Ziegler, Hoboken, N. J.

The following students were examined in all branches except pharmacy:

Henry S. Blackmore, Mount Vernon, N. Y.; Major C. Brown, Gallipolis, Ohio; A. A. Jackson, Norwalk, Conn.; Ernest Sticht, Brooklyn, N. Y.

Special in Chemistry:

Theodore P. Van Ness, Newark, N. J.

Cincinnati College of Pharmacy.—The 16th Annual Commencement was held February 16th, and degrees were awarded to:

J. B. Adams, C. A. Apmeyer, G. B. Cabeen, A. Diebold, F. P. Dieringer, Miss Cora Dow, W. Ellis, C. L. Goeltz, H. L. Grimes, W. E. Jones, E. C. Jungkind, J. Kiehl, G. F. Maxwell, H. W. Weld, H. Voeckel, T. D. Wetterstroem, H. Folger, P. Miller.

Prizes were awarded to Cora Dow, for proficiency in Materia Medica; H. L. Grimes, for practical pharmacy; C. A. Apmeyer in chemistry, and to G. Ridenour, for the best general examination average. In the Junior Class, Victor Muehlberg won both medals in botany and examination.

Pittsburgh College of Pharmacy.—The tenth annual commencement of this college took place March 20th. The salutatory was delivered by Hugo Blanck, A.M., Ph.D., the professor in chemistry. W. T. English, of the Western Pennsylvania Medical College, delivered the annual address to the class. The degree of Graduate in Pharmacy was conferred by President Geo. A. Kelly on:

Elmer E. Knight, Turkey City, Pa.; Wilson Curtis Brewster, Butler, Pa.; Theodore Cappell, Pittsburgh, Pa.; Anthony John Boucek, Allegheny, Pa.; Chas. Wallace Davis, Allegheny, Pa.; George B. Little, Washington, Pa.; James P. Beckley, Glassboro, N. J.; Chas. B. Shrom, Greenville, Pa.; Christ Ernest Strunz, Pittsburgh, Pa.; S. Howard Jackson, Wilkinsburgh, Pa.; Ernest Christian Stiefel, Pittsburgh, Pa.; William G. Minnick, Alleghany, Pa.; Alexander Walter Boggs, Pittsburgh, Pa.; Charles William Kahl, McKeesport, Pa.; William H. Lewis, Belle Vernon, Pa.; John F. Murphy, Pittsburgh, Pa.; Henry Finkelpearl, Pittsburgh, Pa.

Geo. B. Little, of Washington, Pa., delivered the valedictory address. Prof. Proudfit awarded the Shady Side senior prize, gold medal, to Wilson Curtis Brewster and the Shady Side junior prize, silver medal, to Elmer E. Tribby, respectively for best examinations in pharmacy. Prof. S. Henry Stevens, on behalf of friends and members of the Board of Trustees, presented to Elmer E. Knight, of Turkey City, Roscoe's Chemistry complete in six vols. for highest general average and best senior examination in chemistry, and to Theodore Cappel, Square's Compendium to the British Pharmacopœia, for best senior examination in materia medica and botany.

The following juniors passed a successful examination and are entitled to enter the senior class.

Elmer E. Tribby, W. M. Cooke, P. T. Kearns, Oscar Mangold, D. B. Watson, Jos. W. Kinney, Benj. E. Camp, Walter F. Schwartz, W. C. Murphy, Howard Marshal, Isaac K. Darbaker, John A. Copenhaver, Samuel L. Wentling, Franklin L. Fry, A. C. Hyde, Byron Curtis Henderson, Wm. W. Frantz, Meloin A. Paterson, Benson C. Newlon, Harry L. Greer, Chas. F. Birchard, Jas. Armstrong, and Frank P. Garber.

The examining committee consisted of Mess. Fred. H. Eggers, A. C. Robertson, Louis Emanuel, Parry M. Glein, Prof. Francis C. Phillips, besides the faculty, Prof. S. H. Stevens, Prof. Hugo Blanck, and Prof. Adolph Koenig.

The Maryland College of Pharmacy held its commencement on the 22d of March, the following-named gentlemen constituting the graduating class:

Albertson, J. E.; Atkinson, J. M.; Baxley, H. M.; Blair, S. O.; Brack, Jr., Chas. E.; Brown, Jos. D.; Buschman, Wm. G.; Charsee, B. W.; Daiger, Andrew (2); Dalton, Jr., P. H.; Dawson, Wm.; Dietz, O. J.; Douglass, Eugene (3); Dressel, Henry G. (1); Fernsner, Louis G.; Forien, Wm. F.; George, Alfred; Hauser, F. C.; Hill, W. J.; Lankford, G. A.; Link, Joseph; Lippey, Geo H.; Luck, Charles A.; Maschal, Chas. S.; Modena, W. J. (5); Reik, Henry O.; Roeder, Jr., S. T.; Scherer, Wm. (4); Sherman, Louis F.; Simmonds, Sidney J.; Stewart, J. W.; Sumwalt, Jas. B.; Thillman, H. B.; Tierney, James A., Trainor, F. S.; Tumbleson, A, L.; Walz, J. L.; Witherspoon, W. J.; Wolf, Henry G.

The prizemen are indicated in the above list by numerals, (4) taking the "Senior Analytical;" (5) the "Practical Pharmacy," and J. A. Hardison the "Junior College."

FORMULAS.

Corn Remedy.

Salicylic Acid	10 parts.
Lactic Acid	10 "
Collodion	80 "

Mix them. The addition of lactic acid is said to increase the efficacy of this combination very materially. [Heretofore, extract of cannabis indica has usually been added as one of the ingredients.]—*Rundschau* (Prag).

Application to Diphtheritic Membranes.

Papayotin	75 grains.
Distilled Water	90 minims.
Glycerin	½ fluidounce.

For local application to diphtheritic membranes, by means of a camel's-hair pencil.

Incense.

Benzoin	6 oz.
Storax	3 "
Cascarilla, grd.	2 "
Myrrh	1 "
Olibanum	3 "
Cinnamon, grd.	½ "
Cloves	½ "
Nitrate of Potassium	½ "

Mix them.—(After *Chem. and Drugg.*).

Aromatic Vinegar.

Tincture of Benzoin	1 fl. oz.
Alcohol	1½ "
Acetic Ether	1½ "
Extract of Jasmin	1½ "
Acetic Acid	3½ "
Oil of Rose	10 drops
Oil of Neroli	5 "
Oil of Wintergreen	5 "

—(After *Dieterich.*)

Aqua Magnesiæ.

Sulphate of Magnesium	50 parts
Carbonate of Sodium, cryst.	60 "
Distilled Water,	
Carbonic Acid Gas, each	q. s.

Dissolve the Sulphate of Magnesium in 100 parts of Water and filter. Also dissolve the Carbonate of Sodium in 100 parts of Water. Then pour both solutions, at the same time, in a thin stream, into 4,000 parts of water which is being constantly stirred, and contained in a capacious vessel. The resulting precipitate (of hydrocarbonate of magnesium) is washed by decantation with distilled water (which should be quite cold), until nitrate of barium ceases to render it turbid. About eight repetitions of the washing process are required. Then mix the residue with enough water to make the whole weigh 1,000 parts. Next pass a stream of Carbonic Acid Gas through the liquid, contained [in a suitable vessel], until the precipitated salt is dissolved, and transfer the solution into bottles holding about 6 or 7 ounces, which should be stored in a cool place, lying on their sides.—After *Dieterich.*

Liquor Aluminii Chloridi.

Solution of Chloride of Aluminium.

Sulphate of Aluminium	25 parts
Chloride of Barium	25 "
Water	q. s.

Dissolve the two salts, each in 50 parts of warm Water, mix the solutions, and heat the mixture on a water-bath to about 160° F. Then allow to cool, filter, and pass enough Water through the filter to make 100 parts of product.—After *Dieterich.*

Instead of using chloride of barium, chloride of calcium may be used. In this case, however, the mixture of the two salts should be set aside, in a cold place, for at least one week, in order that the excess of sulphate of calcium, not retained in solution, may separate. And when filtering the solution, it will hardly pay to wash out the small amount retained by the precipitate. Of course, when a solution of a definite strength is required, the first-mentioned formula should be used. But when the liquid is wanted as a disinfectant, the second method may be employed.

Pastilles for Fetid Breath.

Coffee, roasted and powdered	3 oz.
Charcoal, powdered	1 "
Boric Acid	1 "
Saccharin	10 grains
Tincture of Vanilla	q. s.
Mucilage of Acacia	q. s.

Reduce the solids to a moderately fine, uniform powder, flavor it with the Tincture and then mix it with enough Mucilage to make a mass which is to be divided into troches or pastilles weighing 10 grains.

Hamburg Bitters.

Galanga Root	80 tr. oz.
Ginger	24 "
Laurel Berries	24 "
Nutmeg	18 "
Cassia Buds	14 "
Pepper, Black	8 "
Orris Root, pow'd	7 "
Cloves	5 "
Lovage Root	7 "
Capsicum	¾ "
Alcohol	29½ pints.
Water	10½ "

Macerate the solids, properly comminuted, with the previously mixed liquid during one week, then express and filter. Percolation is not so suitable, as the aromatics would have to be reduced to a fine powder, which could only be done at the sacrifice of some of their aromatic constituents.

Chartreuse.

1. Yellow.	*By weight.*
Oil of Angelica	24 parts
" Cajuput	3 "
" Calamus	1 part.
" Cloves	2 parts.
" Coriander	2 "
" Hyssop	3 "
" Mace	4 "
" Melisse	3 "
Alcohol, deod.	3,000 "
Sugar	1,200 "
Water	1,800 "
Tincture of Saffron	enough to impart a yellow tint.

2. Green.

Made in the same manner, but the sugar is reduced to 900 parts, and the green tint is produced by the addition of a little solution of indigo.

3. Colorless.

In this case the proportion of sugar is reduced to 10 per cent of the final product.—*Industrieblätter.*

"Soluble" Essence of Lemon.

THE following formula is given by the *Chem. and Drugg.* (the measures being converted into those of the U. S.):

Oil of Lemon	10 fl. oz.
Alcohol	125 fl. oz.
Chloride of Calcium	300 grains.
Phosphate of Sodium	1½ av. oz.
Carbonate of Sodium	¾ av. oz.
Water	19 fl. oz.

Dissolve the Oil in the Alcohol and add to it the Chloride of Calcium dissolved in 5 fl. oz. of the water. Then dissolve the two Sodium salts in the remainder of the Water, add this to the alcoholic solution, shake well and repeatedly during four days, and filter.

Mistura Antifebrini.

(*Antifebrin Mixture. Acetanilide Mixture.*)

Antifebrin	60 grains
Brandy	4 fl. drachms
Water	6 " "
Syrup	6 " "

Dissolve the Antifebrin in the Brandy, then add the other ingredients:

Dose: A tablespoonful.

Menthol Snuff.

Menthol	30 grains
Chloride of Ammonium	90 "
Boric Acid, powd.	60 "

Triturate the substances together so that they will form a fine powder. (Dr. Beehag.)

Chloride of sodium might be substituted for the chloride of ammonium.

Blue-Black Ink.

Aleppo Galls, "blue"	4½ av. oz.
Cloves, bruised	¾ av. oz.
Water, cold	40 fl. oz.
Sulphate of Iron, purified crystals	1½ oz.
Sulphuric Acid, pure	35 min.
Sulphate of Indigo	½ oz.

Macerate the galls and cloves in the water during a fortnight, then press and strain through linen, add the sulphate of iron previously powdered, dissolve and add the acid and indigo solution. Shake or stir the mixture well, then set it aside for a week, and filter it.

The galls should be free from insect perforations. The sulphate of indigo should be used in the form of a thinnish paste, neutral or nearly so.—After *Chem. and Drugg.*

Anti-Gout Collodion.

Flexible Collodion	½ fl. oz.
Ether	½ fl. oz.
Salicylic Acid	60 grains.
Hydrochlorate of Morphine	15 "

Triturate the Hydrochlorate of Morphine to a fine powder, then mix it with the Collodion and Ether in which the Salicylic Acid had previously been dissolved.

When using the preparation, mix it thoroughly by shaking.

Apply it, by means of a brush, to the gouty joint.—*Morain; L'Un. Pharm.*

Locock's Lotion for the Hair.

MR. JOSEPH INCE communicates to the *Chem. and Drugg.* the following formula, as having been devised by Mr. Alexander, and afterwards brought into prominent use by Sir Charles Lubbock. The only change that was made is the reduction of the quantity of oil of mace.

Expressed Oil of Nutmeg	5 fl. oz.
Olive Oil	20 fl. oz.
Stronger Water of Ammonia	20 fl. oz.
Spirit of Rosemary	40 fl. oz.
Rose Water	to make 20 pints

(The figures are approximated to U. S. measure.) The above should be mixed with skill, best by gradually pouring the combined oils, under stirring, into the Stronger Water of Ammonia previously diluted with the Spirit, and afterwards slowly incorporating the Rose-water.

Bryan's Pulmonic Wafers is said by *The New Idea* to consist solely of sugar and corn-starch.

Hall's Catarrh Cure.—*The New Idea* says that this is a solution of iodide of potassium in the compound tincture of gentian of the British Pharmacopœia.

Pasta Mack, an English preparation advertised for the toilet and bath, is said by Eckenroth *(Pharm. Zeitung)* to be a mixture of 27% rich starch, 73% effervescing powder, perfumed and compressed into tablets.—*West. Dr.*

Hagan's Magnolia Balm.—*The New Idea* gives the following formula for a preparation which is substantially the same as the proprietary article: Oxide of Zinc, 4 dr.; Glycerin, 1½ fl. oz.; Water, 2 fl. oz.; Carmine, ¼ gr.; Oil of Bergamot and Oil of Lemon, of each 1 minim.

Fleury's Tasteless Cascarine.—Advertised as harmless and as a new remedy for biliousness, costiveness, headache, dizziness, and torpid liver, is said by *The New Idea* to be subnitrate of bismuth and calomel triturated with cane sugar.

Mother Siegel's Curative Syrup is said to be composed of compound decoction of aloes, borax, capsicum, gentian, oil of sassafras, oil of wintergreen, dandelion, molasses, and alcohol.

Dalby's Carminative is said to consist of carbonate of magnesium, oil of peppermint, anise, nutmeg, laudanum, tincture of assafœtida, spirit of pennyroyal, compound tincture of musk, and peppermint water.

Seven Sunderland Sisters' Hair Grower.—The following formula gives a product substantially identical with the "secret" article. Bay rum, 7 fl. oz.; Distilled Extract of Witch Hazel, 9 fl. oz.; Common salt, 1 dr.; Hydrochloric Acid (5%) 1 drop; Magnesia, q. s. Mix the bay rum and extract and shake with a little magnesia; filter, and in the filtrate dissolve the salt and then add the acid. The acid removes the yellow color acquired by the mixture with magnesia.—*The New Idea.*

Snuff for Coryza.—Dr. Pierre Viger recommends the following:

Powdered Starch,	
Boric Acid,	
Tincture of Benzoin	equal parts.

Triturate the ingredients together, then dry with gentle heat, and put into a suitable box.

Soaps.—Some transparent soaps are very good, some very bad. Good transparent soap is prepared from ordinary soap of good quality, which is cut into shavings, dried, and then treated with alcohol. The alcohol is evaporated, and a transparent soap is left. There are two advantages in this treatment. First, when soap is cut into shavings, any free soda tends to get less by contact with air. Second, the treatment with alcohol removes all excess of soda. The absence of free alkali renders the soap better suited for use on the skin. Many of the bad transparent soaps are prepared from impure materials, and the translucency is secured by the addition of sugar, some specimens containing as much as 25%.—*The Hospital.*

Permanganate of Potassium, dissolved in water in the proportion of 3 to 5 grains to the ounce, is the latest remedy for frost bites of moderate degree or for slight burns.

Salicylc Collodion.—Bivert, an apothecary of St. Petersburg, finds the following to be a good formula:

Collodion	100 parts
Salicylic Acid (crystals)	10 "
Venice Turpentine	1 "
Chlorophyll	q. s.

This collodion is especially useful as a corn-remover.

The Treatment of Furuncles by Intestinal Antisepsis.—Bouchard, in *L'Union Médicale* of January 21st, 1888, reports good results in general furunculosis from

Naphthol (β),	
Bismuth. salicylatis,	
Magnesiæ	āā gr. 5.

repeated four times daily.

Formula for Benzol.—Macalister gives the following formula for administering benzol as a remedy for hooping-cough:

Pure Benzol	♏ ij.
Alcohol,	
Compound Tinct. Chloroform	āā ♏ iiss.
Simple Syrup	♏ xx.
Mucilage	ad ʒ i.

From 4 to 3 drachms may be given, according to age.

NOTE.—Compound Tincture of Chloroform of the British Pharm. is prepared by mixing: Chloroform, 1 fl. oz.; Alcohol, 4 fl. oz.; Comp. Tinct. of Cardamom, 5 fl. oz.

Creasote Mixture for Bronchitis.—Ferrand's formula is:

Creasote	gtt. ij.
Essence of Lemon	gtt. ij.
Syrup of Orange Flowers	gtt. xxx.
Water	gtt. cxx.

A teaspoonful may be taken at intervals of 2 to 3 hours.

Amylene Hydrate, reported to be useful in doses of 60 to 90 grains in cases of alcoholism, morphiomania, epilepsy, and tuberculosis, may be given in either of the following forms. The dose to be taken on retiring:

Amylene Hydrate	gr. lx.
Distilled Water	ʒ x.
Syrup of Raspberry	℥ i.
Oil of Peppermint	gtt. i.

Peppermint water may be substituted for plain water, if preferred.

Emulsion of Terebene.—According to England *(Amer. Jour. Pharm.)*, the following gives a milk-white and perfect emulsion having the odor and flavor of terebene, and miscible with water without separation:

Terebene,	
Cotton seed Oil	āā ♏. clx.
Powdered Acacia	ʒ vi.
Powdered Sugar	ʒ ij.
Water	q.s. ad f ℥ iv.

Mix.

Extract of Coffee.—Paul Noirot, of Paris, is the patentee of a new method of preparing extract of coffee which is said to yield a very satisfactery product.

Roasted and ground coffee of the best quality is treated with boiling water in the usual manner, and the infusion caused to freeze by appropriate refrigerating apparatus. The ice crystals are rapidly crushed, and separated, in a centrifugal machine, from the dense accompanying extract which does not itself freeze. This extract, which is thus freed from about 90 per cent of its aqueous constituent, is then completely deprived of water, in a vacuum apparatus, and the residue made into tablets or cakes.

Milk Jelly.—As a variation in milk diet, the following is recommended by Prof. Liebreich:

Heat 1 quart of milk with 1 pound of sugar, and when the sugar is dissolved continue the heat, at a boiling temperature, for about ten minutes. Now cool it well, and then add, *slowly* stirring, a solution of 1 ounce of gelatin in a cupful of water. Next add the juice of 3 or 4 lemons and 3 wine-glasses full of wine, brandy or other liquor. Set the glasses containing the mixture in a cold place, so that the contents may gelatinize. It is necessary to have the milk quite cold before the other ingredients are added, as it would otherwise curdle.

Milk-Powder.—Dried milk, in form of powder, may be prepared by evaporating skimmed milk in a suitable apparatus, preferably in vacuo and under continued stirring, at a temperature of 60° to 70° C. (140°–158° F.) to a syrupy consistence, then mixing it with 30 to 50 per cent of its weight of finely powdered sugar, and continuing the heat, with constant stirring, between 30° and 55° C. (86°–131° F.) until the product has assumed a dry, granular condition.

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer, for the information of the editor, but not for publication.

No. 2,121.—**Tablet Triturate Moulds** (O. E.).
These moulds, made of hard rubber, are manufactured and sold by A. G. Newman, 1180 Broadway, New York.

No. 2,122.—**Invisible Ink** (E. W. S.).
A very good preparation of this kind may be made with certain cobalt salts.
For instance:

Chloride of Cobalt	50 grains.
Distilled Water	1 fluid oz.
Glycerin	10 minims.

Dissolve the Chloride of Cobalt in the Distilled Water, and add the Glycerin.
Writing executed with this ink is invisible on paper, but on warming the writing turns blue. On exposure to damp air, it becomes again invisible.

No. 2,123.—**Preston Salt** (S. & L.).
This is an ammoniacal smelling salt made by mixing together equal parts of chloride of ammonium and of freshly slaked but dry caustic lime. In place of the chloride, the carbonate of ammonium may be used. The mixture is introduced into the bottles and firmly pressed. Then a few drops of some agreeable perfume—according to the fancy of the maker or consumer—are added. If ordinary corks are used to stopper the bottles, they should be previously soaked in hot paraffin. If glass-stoppers are used, they should occasionally be coated with a minute quantity of petroleum ointment.

No. 2,124.—**Hall's Solution of Strychnine** (D. E. S.).
The formula most generally in use appears to be the following:

Acetate of Strychnine	16 grains
Diluted Acetic Acid	½ fl. oz.
Alcohol	4 fl. oz.
Compound Tinct. of Cardamom	1½ fl. oz.
Water	enough to make 16 fl. oz.

Some formularies or authorities give the quantity of acetic acid much larger. Some of them even direct strong acetic acid to be used, which is evidently a blunder. The object of the Compound Tincture of Cardamom is to impart a specific color and taste. But for this purpose a comparatively small amount of the tincture is amply sufficient.
Dr. M. Hall originally used the following formula:

Acetate of Strychnine	1 grain
Acetic Acid	20 min.
Alcohol	2 fl. drch.
Water	6 fl. drch.

and directed 10 drops to be taken three times daily as a tonic in nervous exhaustion. But, naturally, he often had to alter the proportions. However, through the employment of the preparation as a "house-mixture" in hospitals, a variety of supposed standard formulæ gradually originated.

No. 2,125.—**Kremel's Method of Assaying Pepsin and Pancreatin** (Chicago).
Several years ago, Mr. A. Kremel, of Vienna, published a method of assaying pepsin which is based upon its action upon powdered *non-coagulated* egg-albumen, the author holding that the employment of coagulated albumen is faulty. Without arguing this question here, it may be said that it really matters but little whether the one or the other kind of abumen is taken, as the *relative* digestive strength of the different kinds of pepsin can be measured by either method. Kremel's method is as follows:
Egg-albumen is dried at about 40° C. (104° F.) and reduced to powder. One gramme of this, together with 0.1 Gm. of pepsin, are put into a flask of the capacity of 100 C.c., together with 50 C.c. of a very dilute hydrochloric acid, containing 0.2% of HCl, and heated during three hours at a temperature of 38° to 40° C. The liquid is next exactly neutralized by a previously determined quantity of carbonate of sodium, then heated on a water-bath to about 90° C., and, after the undigested albumen has been coagulated, allowed to cool. Enough water is now added to make the liquid measure 100 C.c., the solution filtered, 50 C.c. of the filtrate evaporated to dryness in a porcelain capsule, the dry residue again dissolved in distilled water, and the solution very carefully filtered through a small wetted filter into a platinum capsule. The filter having been washed, the united liquids are evaporated, and the residue dried at 100° C. and weighed. (If a very exact determination is required, the percentage of nitrogen may be determined in this residue, and the quantity of peptone deduced from this.) The residue is now mixed with carbonate of ammonium and ignited. The amount of ash thus obtained is deducted from the weight of the dry residue. The remainder corresponds to the weight of peptone yielded by 0.5 Gm. of albumen. According to Kremel, uniform results are obtained when the above process is scrupulously adhered to. If modifications are introduced, the results will differ.
The same author directed pancreatin to be examined in the following manner: digest 1 Gm. of dried egg-albumen (prepared as directed in the preceding paragraph) with 0.1 Gm. of pancreatin and 50 C.c. of water at 38° C., during three hours. Then add 0.2 to 0.3 Gm. of chloride of sodium, and 1 drop of diluted acetic acid, coagulate the unaltered albumen on a water-bath, at 90° C. and then continue as directed above, under pepsin. Kremel examined six specimens of pancreatin, of which he found that 0.1 Gm. of each formed from 0.110 to 0.380 Gm. of peptone.
There is one feature of Kremel's process which might with advantage be transferred to other methods of assay. This is the neutralization of the acid liquid when the reaction of the pepsin upon the albuminoids wants to be arrested. The adoption of this plan will probably be a useful feature when making comparative assays of different kinds of pepsin.

No. 2,126.—**Epsom Salt Springs** (A. E. S.).
So far as known to us, the richest Epsom salt springs, the water of which is utilized and sold for medicinal purposes, are situated in Hungary. The well-known Hunyadi János spring contains in 10,000 parts:
194.9 parts of magnesium sulphate and 196.6 parts of sodium sulphate.
The Hunyádi Laszlo spring, situated at a short distance from the before-mentioned (all of which are in the neighborhood of Buda-Pesth), contains still more, viz.:
261.6 parts of magnesium sulphate and 211.0 parts of sodium sulphate.
And recently, a still richer vein has been struck, namely the Hunyádi Lajos spring, which contains:
316 parts of magnesium sulphate and 157 parts of sodium sulphate in 10,000 parts. This is equal to about ½ troy ounce of Epsom salt in one pint.
There are a number of "Epsom" springs in other countries, notably at Epsom, England, from which locality the salt has taken its name. The United States also contains a number of such springs, but none of them contains an amount of the salt which is at all comparable to that of the Hungarian waters.

No. 2,127.—**"Tasteless" Cascara Sagrada** (E. M. J.).
The preparations of Cascara Sagrada (*Rhamnus Purshiana*) generally suffer from the drawback that they are extremely bitter, and that it is very difficult to disguise this bitterness. Even the so-called "elegant" preparations, for instance, Elixir of Rhamnus Purshiana, as usually made, is by no means palatable. Mr. Grazer, of San Francisco, has, however, recently announced (*Pharm. Rundsch.*, January 9th) a method by which this bitterness may be removed. He mixes 1 pound of the powdered bark thoroughly with a milk of 1 oz. of magnesia and 10 fl. oz. of water, then packs the mixture into a percolator and lets it macerate for twelve hours. He then pours on 10 fl. oz. of alcohol, and afterwards, when this has been absorbed, diluted alcohol to cover the drug.
After macerating twenty-four hours, percolation is started, and a fluid extract prepared in the usual manner. The product is said to be of a mild, agreeable, somewhat astringent taste, free from bitterness, and fully representing the medicinal properties of the drug.
Another method consists in extracting the bark with strong alcohol, and precipitating the bitter resin. Regarding this, experiments are being at present made by one of our correspondents.

No. 2,128.—**Devices for holding Labels** (E.).
This correspondent asks a question which will be of interest to many of our readers and, we believe, that a variety of excellent suggestions could be offered on the subject. We invite the attention of our readers to the matter.
Query: "What, in your opinion, is the best device for holding a large number of labels?"
We presume our correspondent has reference both to wholesale and to retail business. Of course, there is a variety of ways to keep labels. The most general, probably, is to keep them in drawers having partitions. But these often take up much valuable space that might have been utilized for other purposes.
Of other methods we may mention here *two*, which are very useful and are probably less known than they deserve. One is, to have all the shelves of the stock-room made of double boards, with an intervening space which need not exceed 1 or 1½ inches in height, into which tin or wooden drawers are inserted which hold the labels corresponding to the articles on the shelf above. These drawers may be made neatly fitting, with intervening partitions, and nicely finished, if the surrounding fittings are handsome and part of a dispensing establishment. For the ordinary stock-

room, however, they may be inserted without intervening partitions, merely placed loosely side by side, though an upright piece or partition may be required in intervals of about 24 inches or less to prevent the upper shelf, by the weight it carries, from being pressed down on the little drawers.

Another plan which we have used with satisfaction is to have a square case constructed, through the centre of which passes a rod which is fastened to the floor and to the ceiling. The case is adjustable at any desired height, and is revolvable about the rod. Every one of the four vertical faces contains as many pigeon-holes, with or without drawers, as the size of the case may permit, or the number of labels may require. One or more of these label cases may be arranged at the side of, or even over the work tables, provided they are adjusted high enough to be out of the way of ordinary packages. A simple touch of the hand will revolve them, and persons at either side of the table or counter may use them. They can be made quite ornamental, if so desired.

One of us has used a case of this kind, constructed after his design, and having 64 pigeon-holes on each of the four faces, for more than 12 years.

Our correspondent also asks us who makes "Peterson's patent label case." We would refer him to our advertisement pages, where he will find that this case is sold by R. W. Tansill & Co., 55 State Street, Chicago.

No. 2,129.—**"Fruit-Sugar"** (Ex.).

"Fruit-Sugar" is another name for "invert-sugar," and designates a mixture, in equivalent proportions, of dextro-rotary glucose (also known as dextrose or ordinary glucose) and of lævo-rotary glucose (or levulose). Fruit-sugar occurs in many fruits, in honey and in certain saccharine exudations, though it may there be accompanied by an excess of one or the other variety of glucose. But true "invert-sugar," consisting of equal molecules, can readily be prepared by warming cane-sugar with dilute acids, when the following reaction takes place:

$C_{12}H_{22}O_{11}$	+	H_2O	=	$C_6H_{12}O_6$	+	$C_6H_{12}O_6$
cane-sugar		water		dextrose		levulose

Invert-sugar is an article of commerce, though only in a few countries. It is specially recommended for the preparation of preserves, and artificial wines. It ferments much more easily than ordinary sugar, and is more readily decomposed on being heated (to about 60° C.), for which reason it is preferable to common sugar in cakes. It has also a more agreeable taste than the other sugars, and for this reason it deserves more attention. According to the *Industrie Blätter*, it may be obtained from the "Zuckerfabrik Maingau" at Hattersheim, Germany.

No. 2,130.—**Preparation of Normal Starch for Assays and Tests** (R. J. S. & Co.).

This subject belongs to the same query which our correspondents have directed to us regarding diastase, but we have preferred to treat of it as a separate query, so as to enable us to index it properly, in view of its practical utility.

When starch solutions are required for the purpose of estimating the amylolytic power of certain ferments, as, for instance, of "pancreatin," diastase, etc., it has been customary to gelatinize starch in the usual manner, that is, by first mixing it with a little cold water, then diluting with more water, and afterwards boiling the mixture until a translucent jelly or liquid is produced, which, if too concentrated, is then further diluted to the desired point. Starch solutions thus prepared are still more or less viscid, even when dilute, and most ferments act upon them rather slowly.

This drawback may be entirely avoided by adopting the plan proposed by Lintner (*Journ. f. prakt. Chem.*, 1886, 380). Instead of using heat and water alone to burst the cell-walls of the starch, he employs hydrochloric acid of a certain strength which accomplishes the same purpose. He directs to proceed in the following manner:

Any desired quantity of best potato-starch is mixed with hydrochloric acid containing 7.5 of the pure acid, in such quantity that the acid stands over the starch. After standing during seven days at the ordinary temperature, or during three days at 40° C. (104° F.), the starch has lost its property of forming a jelly or paste. At the same time, the structure of the starch (aside from small fissures) has remained the same. The starch is now washed by decantation with cold water until every trace of acid has been removed, as shown by delicate litmus-paper. The water is drained off as far as possible, and the starch then dried by exposure to air.

The resulting product is easily soluble in hot water to a clear liquid. Solutions containing 2 per cent remain clear for several days, or have only a faint opalescence, but after that time they become turbid. Concentrated solutions, such as contain 10 per cent and over, congeal, on cooling, to a salve-like mass.

Starch, or starch solution, thus prepared, reduces Fehling's solution only in a most minute degree, too feebly to require its being taken into account. [It will, however, be necessary to examine every lot of starch thus prepared to insure its indifference against Fehling's solution.] Hydrochloric acid of 10 per cent at once gelatinizes starch, and in this respect hydrochloric acid is much more energetic than sulphuric, which must be at least of a strength of 15 per cent, and used at a temperature of 40° C. (104° F.) to bring the starch to the same condition.

No. 2,131.—**Antipyrin incompatible with Spirit of Nitrous Ether** (Texas).

The following prescription was presented to a friend of one of our correspondents:

℞ Antipyrini	gr.	15
Spir. Æther. Nit.	fl. ʒ	2
Tr. Aconit. Rad.	gtt.	8
Syr. Lactucarii q. s. ad fl. ℥		2

M. et signa: *Dose:* One teaspoonful.

This prescription was prepared and produced a green solution, and one teaspoonful was given to a patient, a little boy of 5 years of age, and who was not by any means sick or confined to his bed, but seemed to be ailing with a little fever. After taking the first teaspoonful, the child was thrown into convulsions, and died in about two hours.

In explanation of the reaction taking place between antipyrin and spirit of nitrous ether, we would state that the incompatibility of the former with nitrous acid or nitrites, in presence of acids, has long been known. In fact, the reaction has been used both as a test for nitrous acid as well as for antipyrin.

In dilute solutions containing nitrous acid, antipyrin causes a bluish-green coloration. In concentrated solutions it produces a precipitate of bluish-green crystals, consisting of *iso-nitroso-antipyrin*. The reaction is as follows:

$C_{11}H_{12}N_2O$	+	HNO_2	=	$C_{11}H_{11}N_3O_2$	+	H_2O
antipyrin		nitrous acid		iso-nitroso-antipyrin		water

Now it is well known that nitrites, in general, are active poisons. Even small doses of an alkali nitrite, for instance nitrite of potassium or sodium, say 5 to 8 grains, produce a throbbing and a sensation of bursting in the head, with vertigo, eructations, nausea and vomiting, cyanosis, and often convulsions. Free nitrous acid is still more energetic, even in very small quantities. The new substance produced by the reaction between antipyrin and spirit of nitrous ether appears to belong to that class of bodies in which the effect of the presence of an active radical is greatly intensified. Yet neutral nitrites do not produce the above-mentioned reaction with antipyrin. It is necessary that the nitrous acid be in the free state. If this is the case, the bluish-green or pale green color will appear on the addition of a solution of antipyrin. When this color is once developed, it is not destroyed or removed by the addition of an alkali. But if the free nitrous acid is first neuralized with an alkali, the addition of antipyrin will fail to produce any color reaction.

No. 2,132.—**Syrup of Iodide of Calcium** (North Carolina).

This syrup is usually directed to be made by dissolving iodide of calcium in syrup. Attention has, however, been repeatedly drawn to the unsatisfactory quality or condition of the commercial iodide of calcium. It is a very unstable salt, apt to become colored by the liberation of iodine and the formation of secondary products. Recognizing these facts, Mr. O. Eberbach, some years ago, recommended a new formula for preparing this syrup, in which a definite quantity of iodine was employed as the starting point. This was converted first into ferrous, and afterwards, by the addition of more iodine, into a ferroso-ferric iodide, and the latter subsequently decomposed by adding a *milk of lime* to the boiling solution until all the iron salt is decomposed. In this reaction, ferroso-ferric oxide is thrown down, and iodide of calcium remains in solution. By simple filtration and washing of the residue on the filter, the whole of the iodide of calcium is extracted as a colorless solution, from which the syrup is then made. The resulting product is very satisfactory.

There is, however, one serious drawback connected with this process, namely, there is no visible criterion to tell when the exact quantity of milk of lime required to decompose the iron salt has been added, and the usual consequence will be that lime will be added in excess and render the resulting solution strongly alkaline. This may be avoided by a slight modification. Instead of using milk of lime to decompose the iron salt, carbonate of calcium may be used. This produces a copious effervescence, the cessation of which promptly indicates the end of the reaction. Besides, even if there is a large excess of the carbonate used, it cannot enter into solution, but remains mixed with the precipitated oxide of iron.

When small quantities of the syrup are to be prepared, we recommend the following process:

Iodine	552 grains.
Iron Wire, fine and cut	200 "
Precipitated Carbonate of Calcium	250 "
Distilled Water	q. s.
Sugar	11 troy oz.
Syrup	enough to make 16 fl. oz.

Mix the Iron Wire with 414 grains of the Iodine and 3 fluidounces of Distilled Water, and apply a gentle heat, until the Iodine is combined and the liquid has acquired a greenish color. Filter the liquid through a small filter, and wash the flask and filter with 1 fl. oz. of Distilled Water. To the filtrate, contained in a flask, add the remainder of the Iodine, and heat the solution gently, taking care that no iodine is lost by evaporation. Heat 4 fl. oz. of Distilled Water in a capacious capsule to boiling, and add to it alternate small portions, first of the Precipitated Carbonate of Calcium, and then of the solution of Iodide of Iron, stirring briskly, and waiting each time until the violence of the reaction moderates. From time to time add a little Distilled Water, to replace that lost by evaporation. When all the Calcium salt and Iron solution has been added, continue the heat until the solution is quietly boiling. Then filter it through a wetted filter, and wash the latter with enough Distilled Water to make the product, when cold, measure 8 fl. oz. In this dissolve the Sugar by agitation, then make up the volume with Syrup to 16 fl. oz., and strain, if necessary.

We find it preferable to add small alternate portions of the carbonate of calcium and the iron solution, rather than to add the whole of one constituent first, and afterwards the other. Further, it is far better to add the iron solution to the water containing the carbonate of calcium than *vice versa*, as the oxide of iron produced separates in a much more compact form and is more easily separated by filtration.

When making the process on a large scale, however, we recommend the use *both* of hydrate of calcium (as milk of lime) and of carbonate of calcium. Working on the small way makes it somewhat difficult to adjust the quantity of hydrate of calcium (lime) so as to still leave the end of the reaction to be accomplished by means of the carbonate of calcium. But when operating on the large scale, the time required for the duration and subsidence of the effervescence is so considerable, and the vessels must be chosen so large, that a modification becomes necessary. We suggest to use milk of lime during the first part of the reaction, and to use the carbonate of calcium only towards the end. The quantities of ingredients, calculated for a *pint* of syrup, then are as follows:

Iodine	552 grains.
Iron Wire	200 "
Lime	100 "
Precipitated Carbonate of Calcium	70 "
Distilled Water	q. s.
Sugar	11 troy oz.
Syrup	enough to make 16 fl. oz.

Slake the Lime with a sufficient quantity of Water, and add it, as apparently dry powder, in the same manner as is directed in the formula for the carbonate. Lastly, add the Carbonate in the same manner, and continue as directed.

No. 2,133.—**Preparation of Active Diastase** (R. J. S. & Co.).

Lintner, who has published the most detailed report on the properties, preparation, and assay methods of diastase, recommends for its preparation the process below given (in *Journ. f. prakt. Chem.*, 34).

It may be obtained from any kind of malt. But it is preferable to employ undried barley-malt, though air-dried malt may also be used. But roasted malt is less advantageous.

Previous to Lintner's investigations, it was customary to extract the diastase from malt by water or glycerin, and to precipitate the diastase from these liquids, either directly by precipitation with alcohol, or after heating the liquid to 70° C. (158° F.). Or, it was precipitated from its glycerin solution by alcohol, or by a mixture of alcohol and ether. Another method was that proposed by Bruecke, who caused the production, in the solution, of a voluminous precipitate of phosphate of calcium which carried the diastase along with it. But this method, as well as several others, in which heat is employed, have been found entirely unsatisfactory. After an extended series of experiments, Lintner found that the most active diastase is obtained by treating crushed undried barley malt with 2 parts of water. Considering the full effect of *pure* diastase upon pure starch to be represented by the number 100, then the product furnished by the method just mentioned had an activity represented by 96. Air-dried malt, treated under the same circumstances, yielded a product corresponding to 55.5 per cent of the absolute effect.

The following is the process recommended by Lintner for obtaining diastase of satisfactory power.

Macerate 1 part of undried barley malt or air-dried malt (deprived of the sprouts by sifting) with 2 to 4 parts of alcohol of 20 per cent during twenty-four hours or longer. The object of the alcohol is to permit a protracted digestion without running the risk of inducing fermentation or acetification. The liquid is then separated as far as possible, and precipitated by not less than 2 nor more than 2½ times its own volume of absolute alcohol. It is not advisable to use more, since the excess would precipitate pectous substances and but little more diastase. A little of the latter always remains dissolved by the alcohol, but the amount is too small to pay the labor of recovery. On stirring, the precipitate caused by the absolute alcohol separates in yellowish-white flakes which rapidly settle to the bottom. The supernatant liquid is poured off, the precipitate transferred to a filter, the alcohol drawn or aspirated off from it as rapidly as possible, and the residue on the filter then transferred to a mortar, where it is triturated with absolute alcohol. The mass is then again transferred to a filter, washed with absolute alcohol, the precipitate then triturated with ether, and after this has been drawn or washed off, the residue dried in vacuo over sulphuric acid.

The systematic dehydration thus directed to be effected by means of absolute alcohol and ether is necessary in order to obtain the diastase as a flocculent, yellowish-white powder of great activity. If the powder was not thoroughly dehydrated, it becomes dark colored when dried in vacuo, and acquires a horny consistence, suffering at the same time in strength.

No matter how long the diastase may be dried over sulphuric acid, it always retains a small quantity of alcohol, which can only be removed by drying at 105° C. (221° F.). But as this temperature would be injurious to the ferment, this drying is inadmissible except in a portion which is to be employed for other purposes than to test the fermentative power of the sample. Even the best known method of assay is not entirely free from defects, hence no further source of error should be introduced.

Diastase precipitated as above directed promises to be of considerable use in laboratories for the assay of certain articles of food. It remains active for a long time.

Lintner regards 1 Gm. of crude diastase to equal about 50 Gm. of good undried barley malt.

The precipitated diastase is wetted by water only with difficulty. It is therefore necessary to triturate it before using it with a little water in a mortar, whereby a turbid liquid is produced.

Crude diastase persistently carries down with it a considerable quantity of mineral constituents. When freshly precipitated it contains 16 per cent of ash, and after being reprecipitated six times, it still retains 10%. This may be reduced by dialysis to 5 per cent. The mineral impurity accompanying it is phosphate of calcium.

Lintner found that, by repeated purification, the nitrogen constituent of the diastase gradually rose to a little over 10 per cent. There appears to be no doubt whatever that diastase contains nitrogen, though this had been denied by Payen and Persoz.

During the first precipitation of the crude diastase, the latter carries along with it some non-nitrogenized matters which partly reduce Fehling's solution. The principal portion of these matters resembles dextrin in its nature. But by repeated precipitations these substances are removed.

CORRESPONDENCE.

To Soften Hard Skin on the Hands.

SIR:—Many people now suffer from a formation of hard skin on their hands called eczema, and it happens with people who can least afford the annoyance, because they are overworked both in body and mind, and more often than not, confined in close offices during the day.

I think many will find relief if, after they have washed their hands, they would put on some agnine or other wool fat, and rub it well in with pumice stone. It will be found that all the hard skin will come off, leaving a smooth, comfortable surface. Wipe the hands, but do not rub off the whole of the wool fat, and in a few minutes the hands will become soft and pliable, and remain so for hours. Yours truly, THOS. CHRISTY.

LONDON, ENGLAND, February 28th, 1888.

Benzoate of Sodium as a Remedy for Follicular Tonsillitis.—Boislinière highly recommends the following formula as a remedy for follicular tonsillitis:

Benzoate of Sodium	ʒ i.–ʒ iv.
Glycerin,	
Elix. Calisaya bark	āā ℥ i.

M. A teaspoonful every hour or two. No gargle or local applications are required and instead of the disease lasting two to five days, as is the case where it is uninfluenced by medication, it is cured (in an average based on 75 cases) in 20 hours; the extremes bring 12 and 36 hours. It seems to him apparent that the febrile element of the disease is controlled, and that its use, even with children, is unattended with risk.

Fluid Extract of Quebracho colorado is recommended by Dr. Bordeaux, of Brussels, as an application for wounds. Being applied with a soft brush, like collodion, it causes transient pain, and in about an hour dries so as to form an artificial scab which can only be loosened with the aid of hot water. It requires the aid of no other dressing and greatly favors healing by first intention.

HOW DR. SCHNAPSKUEBEL'S WORLD-RENOWNED STOMACH BITTER WAS DISCOVERED.

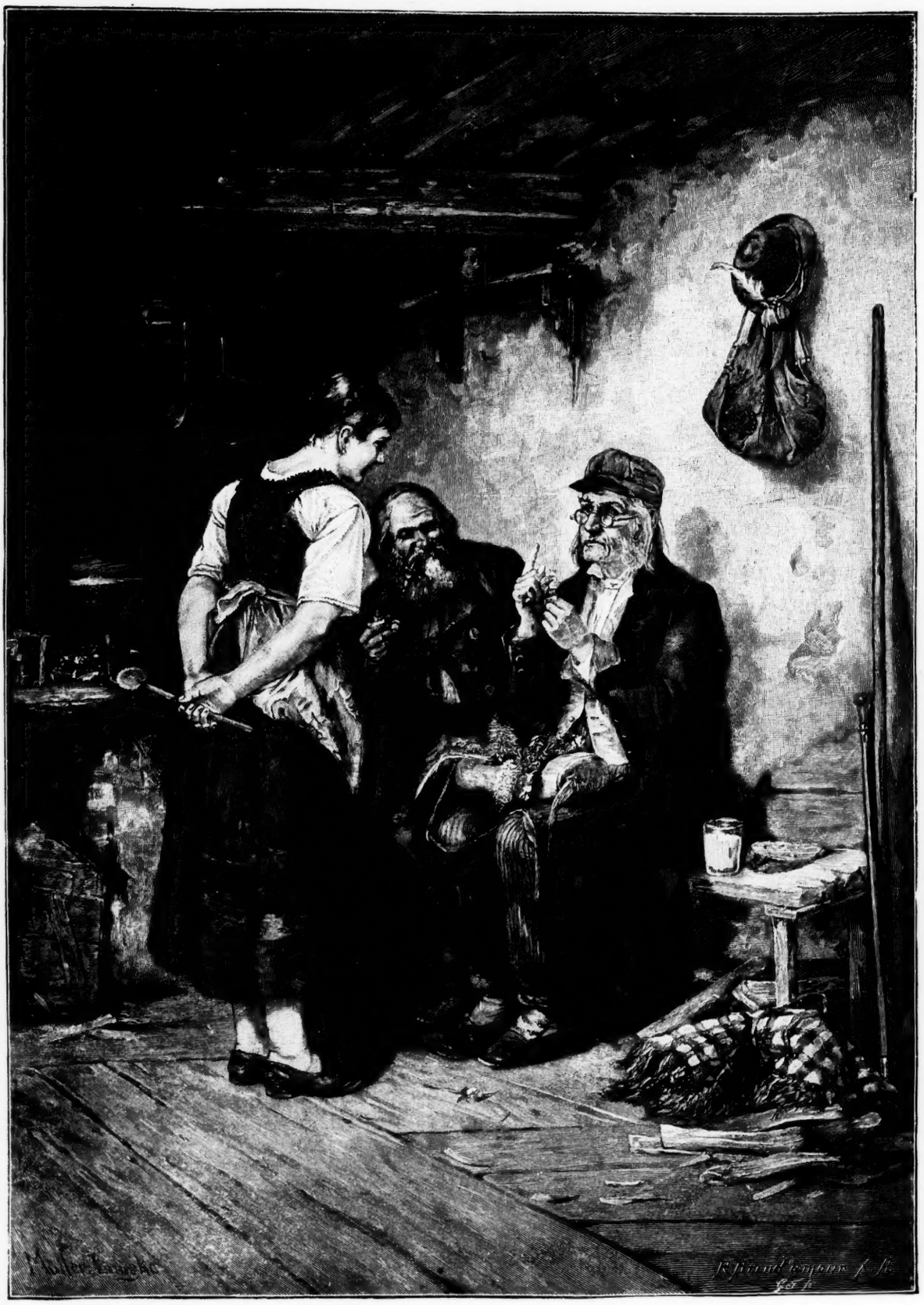
Carbolate of Camphor which is recommended as a wound-dressing, is made by dissolving camphor in 95% solution of carbolic acid to saturation. The acid will dissolve about 3 times its weight of the camphor and the product is thin, clear, oleaginous, and has an odor of camphor rather than of carbolic. To the sense of taste it is slightly pungent and characteristic of camphor without the flavor of carbolic. Ten-drop doses may be taken internally with the aid of a capsule. Its external use causes for a few minutes a sense of warmth, and on abraded surfaces smarting for a few moments follows its use. Injected hypodermically it causes stinging, quickly followed by anæsthesia. When mixed with an equal amount of cotton-seed oil and applied to a fresh wound with gauze or cotton, it prevents suppuration.

A Menthol Snuff for the treatment of laryngeal diseases, recommended by Dr. A. G. Buhay in the *Edinburgh Med. and Surg. Jour.*, consists of menthol, ʒ ss.; Ammon. chlor., ℈ iss.; Pulv. Acidi borici, ʒ i.

When finely pulverized, this will be found a useful insufflation in chronic laryngeal catarrh, laryngeal phthisis, nasal catarrh and ozæna, and syphilitic rhinitis.

The same authority recommends a 25% per cent solution of menthol in olive oil as an application on acute pharyngitis and tonsillitis. When applied to the nasal mucous membrane it should be from 5 to 20% per cent only.

Another formula, for local application, consists of, Iodine, gr. vi.; Iodide of potassium, gr. xx.; Menthol, ʒ iss.; Glycerin, ʒ vi.; Water, ʒ iij.



THE BOTANIST.